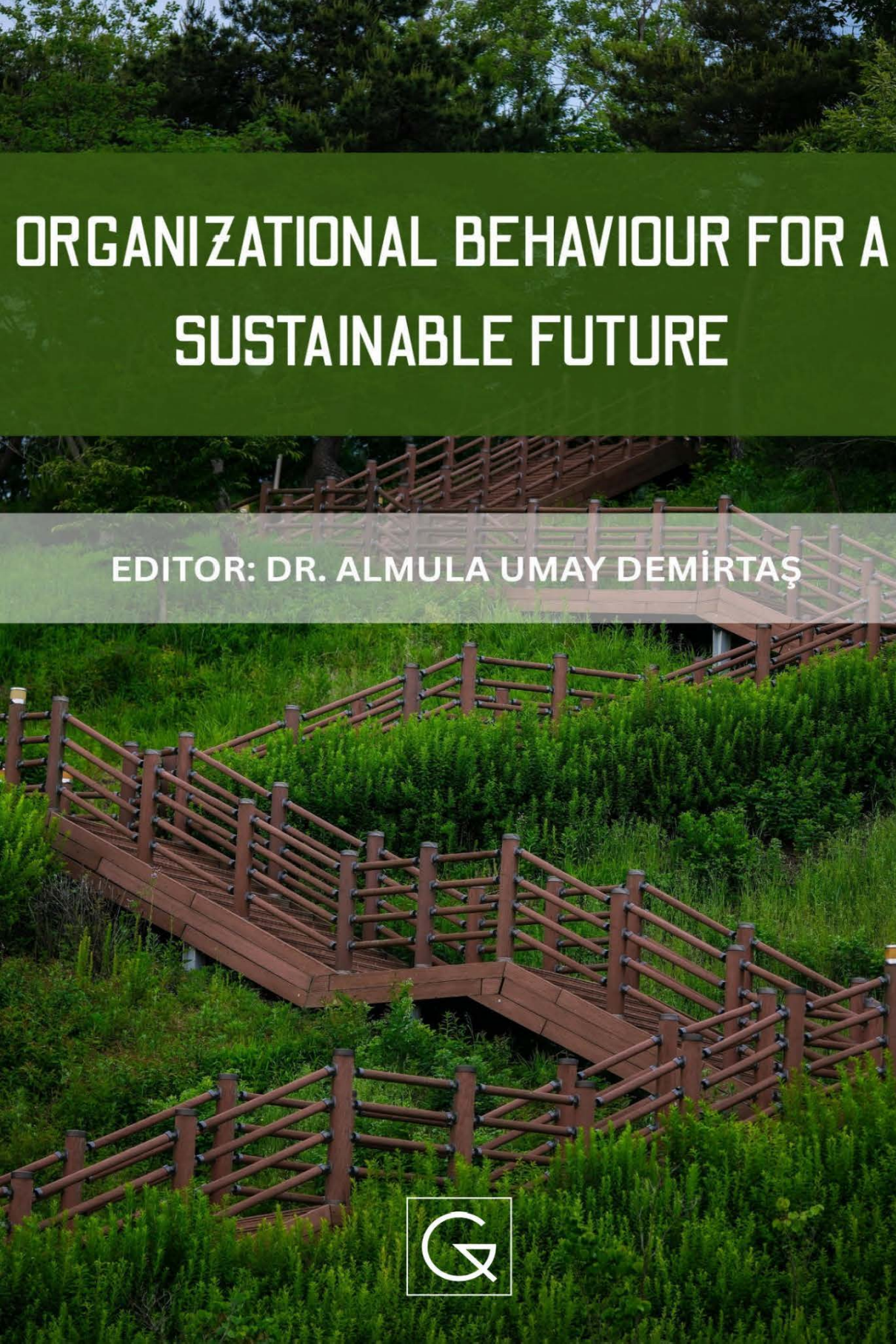

ORGANIZATIONAL BEHAVIOUR FOR A SUSTAINABLE FUTURE

EDITOR: DR. ALMULA UMAY DEMİRTAŞ

Published by: Global Academy Publishing House
ISBN Number: 978-625-6276-39-0
doi number: https://dx.doi.org/10.59740/academy.86
Publishing Date: December 15, 2025

Adress: Konutkent 2955. St. Oyak 1 Number: 8/6 Cankaya / Ankara / TÜRKİYE

e-mail: globalyayinlari@gmail.com
https://www.globalacademy.com.tr/

ORGANIZATIONAL BEHAVIOR FOR A SUSTAINABLE FUTURE

Editor

Dr. Almula Umay DEMİRTAŞ

GLOBAL ACADEMY

Preface

This study indicates that sustainable management has developed from a theoretical discourse into a key component of organizational behavior. This transition highlights the need for organizations to integrate themselves with contemporary sustainability-oriented management approaches.

Correspondingly, the demand for an up-to-date and comprehensive resource on sustainable organizational behavior has become progressively obvious. By integrating theoretical perspectives with real-world applications, this book intends to guide students, scholars, and practitioners in understanding this developing field.

The chapters examine the comprehensive relationship between sustainability and organizational behavior from both conceptual and practical perspectives. Drawing on the expertise of distinguished contributors, the book shows national and international examples that clarify how organizations may embrace a sustainable future.

I extend my sincere appreciation to all contributing authors for their commitment and valuable insights. I am also grateful to Global Publishing and the institutional partners for their outstanding support throughout the development of this book. My thanks go as well to Ömer Dağlı for his continuous assistance and contribution to the book's cover design.

Sustainability has become indispensable at individual, group and organizational levels. Organizational behavior, in this way, plays a crucial role in shaping future-oriented organizations and fostering transformation through ethical values, culture, and responsible management practices. I expect this book may serve as a suggestive guide on this path of sustainable transformation.

Editor
Dr. Almula Umay Demirtaş

CONTENTS

CHAPTER I

BUSINESS CLUSTERING AS A STRATEGIC TOOL FOR THE SUSTAINABLE DEVELOPMENT OF SMES AND INDUSTRIAL SECTORS……1-38

Almula Umay DEMİRTAŞ

Ziya Burhanettin GÜVENÇ

CHAPTER II

UNDERSTANDING SUSTAINABILITY IN ORGANIZATIONAL CONTEXTS……..39-70

Burak Efe BAHADIR

CHAPTER III

REIMAGINING LEADERSHIP FOR SUSTAINABLE EDUCATIONAL MANAGEMENT: AN AI-ENHANCED CONCEPTUAL FRAMEWORK……71-101

Md Harun RASHID, Intan Marfarrina BINTI OMAR,

Gao SUYU

CHAPTER IV

THE POLITICS OF PROTEST ANDORGANIZATIONAL RESILIENCE: DIGITAL CITIZENSHIP AND DISINFORMATION IN INDONESIA'S DEMOCRACY……...102-162

Rizki Amalia YANUARTHA

Putri HERGIANASARI

CHAPTER V

PRODUCTION MANAGEMENT FROM THE PERSPECTIVE OF DIGITAL TRANSFORMATION, SUSTAINABILITY, AND ORGANIZATIONAL BEHAVIOR: PROCESS OPTIMIZATION IN A CONSTRUCTION MACHINERY MANUFACTURING PLANT…….163-200

Hacı SARI

Pınar ŞİPKA

CHAPTER VI

SUSTAINABLE HUMAN RESOURCE MANAGEMENT AND ORGANIZATIONAL PRACTICES IN OFFICE-BASED WORK IN VIETNAM……201-223

Van-Ha Luong THI

CHAPTER VII

CHANGE MANAGEMENT FOR SUSTAINABILITY……224-262

Lookman Adefolarin BALOGUN-SHITTABEY

Benneth Uchenna EZE

Henry Adewale ODUNAYO

Sunday Oluwadamilare FAPARUSI

CHAPTER VIII

TECHNOLOGY, DIGITALIZATION, AND SUSTAINABILITY BEHAVIOR…….…….263-288

Betül KARAKUŞ

CHAPTER IX

KNOWLEDGE STRATEGIES FOR DRIVING ORGANISATIONAL SUSTAINABILITY……..289-320

Lookman Adefolarin BALOGUN-SHITTABEY

Benneth Uchenna EZE

Sunday Oluwadamilare FAPARUSI

Joseph Eromonsele UGEGE

CHAPTER X

ORGANIZATIONAL CULTURE AND SUSTAINABILITY VALUES…….321-336

Dr. Lale GÜVENLİ

CHAPTER I

BUSINESS CLUSTERING AS A STRATEGIC TOOL FOR THE SUSTAINABLE DEVELOPMENT OF SMES AND INDUSTRIAL SECTORS

Almula Umay DEMİRTAŞ [1]

Ziya Burhanettin GÜVENÇ [2]

[1] umaykaramanlioglu@gau.edu.tr, ORCID ID: https://orcid.org/0000-0001-9810-8535, Girne Amerikan Üniversitesi

[2] Multiconsult2017@hotmail.com, ORCID ID: 0009-0008-0331-6306, Multi Consulting A.Ş

Introduction

The reinforcing global competition, the stimulation of digital transformation, and the value of sustainable development goals are extremely shaping the future of small and medium-sized enterprises (SMEs) and industrial sectors. Limited resources, surging environmental challenges, and the pressures brought by technological change make it progressively difficult for businesses to secure a competitive edge through traditional approaches. In this way, business clustering emerges not only as a system to foster economic growth but also as a strategic model that facilitates sustainable development.

The notion of clustering may be characterized as a system in which firms, suppliers, universities, research centers, and public institutions in a specific industry or value chain come together on the base of collaboration. Such an organization goes beyond creating economies of scale; it advances knowledge exchange, strengthens innovation capacity, reduces costs, and facilitates access to global markets. On this wise, SMEs gain resilience and sustainability opportunities that they could practically achieve on their own.

Sustainable development involves the balanced economic growth, environmental protection, and social welfare. In this way, clusters allow SMEs to adapt more simply and at lower costs to processes such as the green economy, circular production, digital transformation, and internationalization. In addition, clustering reinforces regional development by generating new employment opportunities, strengthening innovation ecosystems, and contributing to the wider distribution of social welfare.

This chapter examines the role of business clustering obtaining in a sustainable development for SMEs and industrial sectors. It delves into the conceptual foundations, strategic dimensions, and international practices of clustering. The analysis points out that clustering is not simply a means of securing competitive

advantage but als a strategic necessity for reaching sustainable development goals.

Literature Review

What Is Sustainable Development? Why Is It Important?

Sustainable development is considered as holistic strategies implemented by a country to ensure its long-term economic, social, and environmental well-being and the needs of future generations. Sustainable development is viewed an approach that aims to harmonize the connection between ecological sustainability and economic development (Sachs, 1993). This concept is not limited to economic growth but also aims for creating the balanced between society and nature. Today, countries and the business world face various global issues that threaten sustainable development. A country's ability to achieve sustainable development, together with the business world producing goods and services, is of critical importance for national survival and the protection of future generations. Therefore, it is essential to develop careful policies and strategies in the following areas:

- Climate change and environmental degradation
- Limited natural resources: water, land, forests, energy, etc.
- Rapid technological development and its creative destruction effect on business
- Population growth, poverty, and migration

The country's governance policy, together with the business world producing goods and services, must be determined as a sustainable, balanced, and long-term development model. While meeting today's needs, how can a roadmap or systems engineering be prepared to ensure that sectors maintain their competitiveness and allow future generations to meet their own needs and improve their competitiveness? This section will elaborate on the roadmap required for sustainable development

and present a development model proposal tailored to the local dynamics of developing countries.

Sustainable development has long been discussed in the literature as an approach aiming to balance the conservation of natural resources, economic growth, and social welfare (Meadows, Meadows, Randers & Behrens, 1972; United Nations, 1987). The central principles of this approach are organized under three main headings, as mentinoned below. The notion of development may be viewed a functional process including of economic, social, and environmental dimensions (Gupta & Vegelin, 2016).

Economic Sustainability

Economic sustainability comprised strategies implemented to provide the long-term well-being of a society and preserve natural resources for future generations. This approach is not limited to short-term economic gains; it also provides the sustainability of economic stability and growth through the efficient and responsible use of resources. Efficient use and conservation of resources: It requires the conscious use of limited resources such as water, land, forests, and energy. It emphasizes the importance of transferring these resources to future generations without diminishing them (World Bank, 2020). Achieving economic sustainability is not limited to adhering to the conscious use of resources; it must also be supported by long-term strategies and innovative practices. Environmentally friendly investments, sustainable production methods, and international collaborations ensure the sustainability of economic stability and growth.

- Long-term, eco friendly, competitive, science- and technology-based investments reduce the risk of economic crises.
- Adoption of green economy and circular economy models
- Development of sustainable agricultural and industrial practices, promotion of organic farming and permaculture

methods, dissemination of water-saving irrigation systems
- Financial and technological support from developed countries to developing countries is of great importance.

As mentioned before, these evaluations lead to the literature on sustainable development and economics (Meadows, 1972; Sachs, 2015; Raworth, 2017; World Bank, 2020).

Social Sustainability

Social sustainability adresses to provide the long-term welfare of societies by developing social justice, equality, and access to services. This concept supports the holistic development of societies in company with economic and environmental sustainability. Achieving social sustainability is immediately related to improving individuals' education, healthcare, and living standards. Providing access to education and healthcare, teaching sustainability approaches from early years, reducing poverty, promoting gender equality and human rights, combating poverty and hunger, reducing unemployment, and assuring social justice are crucial for social sustainability (Sachs, 2015).

Environmental Sustainability

Environmental sustainability aims to assure natural systems and the long-term continuity of ecosystem services. This notion addresses environmental issues such as climate change, biodiversity loss, waste management, and energy use, providing societies have a sustainable environment. Environmental sustainability involves strategic way to keeping natural resources and providing the long-term health of ecosystems.

- Dealing with climate change: Instead of extreme fossil fuel use, it provides the conversion to renewable energy sources. Extreme consumption of fossil fuels has caused the release of multiple greenhouse gases into the atmosphere, putting the global temperature average on the

trend. This change will threaten many countries in the near future. Increasing the use of solar, wind, and hydroelectric energy resources should be a priority. These evaluations are pertaining to the IPCC report, which presents scientific data on the effects of climate change on sustainable development (IPCC, 2021).

- Conservation of biodiversity
- Widespread adoption of waste management and recycling
- Building a livable world. This approach is established on the study that classified the ecological boundaries humanity must not exceed (Rockström et al., 2009).
- Urban Planning: Expanding green areas, developing public transportation, and improving building standards with high energy efficiency. These recommendations are based on the OECD's comprehensive guide on sustainable urban planning and circular economy (OECD, 2021).Sustainable development is a process model that follow to balance economic growth, social equality, and environmental protection. In the Brundtland Report, this notion is decided as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 1987). This idea is a strategic importance, specially for developing countries.

One of the most effective methods to instrument the sustainable development model is the clustering approach, which provides the development of sectors through cooperation. This system not only increases economic competitiveness but also assures a platform for the transmission of innovative solutions (Porter, 1990; Ketels, 2004; OECD, 2005; Güvenç, 2017).

However, sustainable development has not only an economic but also an ecological dimension. Development that disregards the planet's carrying capacity and ecological boundaries will not be possible in the long term (Rockström & Klum, 2015). Therefore, sustainable development is not a choice but a necessity for the future of humanity. A fairer, livable, and resilient world can be built by maintaining the balance between economic, social, and

environmental factors. These evaluations are presented based on international reports on sustainable development and fundamental academic studies in the field (WCED, 1987; Elkington, 1997; Griggs et al., 2013; United Nations, 2015; UN SDGs; WWF & Greenpeace, 2025).

The Importance of Micro, Small, and Medium Enterprises (SME) Sustainability in Turkey

One of the cornerstones of the Turkish economy is businesses, classified by size into micro, small, medium (SMEs), and large enterprises. The numerical distribution of these companies, their share in employment, and their role in exports are significant completing factors in economic policies. The distribution of companies by size, their numbers, and their export performance are expressed below:

Distribution of Companies by Size in Turkey

Micro, small, and medium-sized enterprises

Micro, small, and medium-sized enterprises are collectively referred to as SMEs. They constitute the vast majority of businesses in Türkiye According to data from the Turkish Statistical Institute (TÜİK) and the Türkiye SME Research:

- Micro and small enterprises (1-49 employees) account for approximately 95% of all businesses. Micro enterprises (1-9 employees) make up ~50%, while small enterprises account for ~45%.
- Medium-sized enterprises (50-249 employees) make up about 4% of total businesses (TÜİK, 2023).

Large Enterprises

- Large enterprises (250+ employees) constitute about 1% of total businesses.

Although small in number, large companies have significant weight in the economy. There are around 5,000 large enterprises in Türkiye, and these firms provide about 40% of total employment (TOBB, 2023).

Export Performance of SMEs and Large Companies

Exports by SMEs

SMEs account for a significant share of Türkiye's total exports. However, their share in exports is lower compared to large enterprises:

- SMEs' share in total exports: 35-40%
- Large enterprises' share in total exports: 60-65%

According to 2022 data, SMEs exported approximately $85 billion, while large companies exported around $150 billion (TİM, 2023; İSO, 2023).

Although SMEs make up the overwhelming majority of businesses in Türkiye, state support and easier access to international trade networks are required to increase their export capacities (TÜİK, 2023; TOBB, 2023; TİM, 2023).

Employment Contribution of SMEs and Large Enterprises in Turkey

Employment Share of Micro and SMEs

SMEs account for about 75% of total employment in Türkiye. The breakdown is as follows:

- Micro enterprises (1-9 employees): ~50%
- Small enterprises (10-49 employees): ~20%
- Medium-sized enterprises (50-249 employees): ~5%

Employment Share of Large Enterprises

- Large companies (250+ employees): ~25%

Although micro-enterprises (1-9 employees) are the most common type of business, their productivity and wages may be lower compared to large companies. SMEs, particularly in the service, retail, manufacturing, and agricultural sectors, provide intensive employment. Large companies, on the other hand, provide significant employment particularly in manufacturing, automotive, textile, and finance sectors (TÜİK, 2023; TOBB, 2023; TİSK, 2023).

As the data shows, micro and SMEs account for 75% of total employment. However, accessing finance is not easy for these businesses. They are weak in terms of productivity. They struggle to find skilled labor. Their structures are fragile. Protecting and developing micro and SMEs is of great importance for countries' sustainable development. Since they are numerous, even small increases in employment within these businesses can help eliminate unemployment problems.

However, it does not seem possible for these businesses to achieve sustainable development on their own. The problems they face are too deep for them to overcome alone. Therefore, for micro and SMEs to achieve sustainable development, sectoral clustering is of vital importance. Within sectoral clusters, they will find it easier to receive training in areas they lack and access information. Productivity-enhancing practices can be carried out within the cluster. They can learn to carry out cost accounting more accurately.

It is also not possible for these firms to achieve digital transformation and transition to a green economy on their own. The digital maturity levels of micro, small, and medium-sized enterprises in Türkiye remain between 1.5 and 2.5 on the Industry 4.0 scale. The share of SMEs at Industry 2.0 and above is quite

low; therefore, it is almost impossible for them to carry out transformation processes alone (TÜSİAD, 2016).

Sectoral clustering of SMEs will also support businesses in these critical areas. Increasing their resilience against economic crises is highly important. Since SMEs account for 75% of employment, massive job losses may occur during crises. Therefore, sectoral clusters suitable for Turkey's needs should be established without delay.

What Is Business Clustering?

Projects that support the development of a region can vary in type and be effective in different areas. For instance, initiatives such as strengthening infrastructure, building communication networks, opening health and education institutions, planning industrial zones, or creating research centers are valuable. Nevertheless, the sustainable development of a region or country may not be provided entirely through such investments. The main priority should be the establishment of a healthy ecosystem in which young entrepreneurs and creative individuals can flourish. Such an ecosystem forms the foundation of long-term economic and social growth. One of the primary tasks in establishing a healthy ecosystem is the formation of sectoral clusters. In national development plans, it is of great importance to prioritize clustering strategies that will increase cooperation and innovation capacity among sectors (U.S. Department of Commerce, 2012).

If this ecosystem cannot be established, the country will lose its future through brain drain, as it will be unable to create jobs that can satisfy intelligent, hardworking, and successful young people. In such countries, production management becomes inefficient, product costs increase, the country loses its competitiveness, and becomes dependent on foreign sources for medium-high and high technology. It becomes extremely difficult to produce high value-added products. As a result, the country continually runs a foreign trade deficit, and per capita national income remains at low levels.

The results of scientific studies that began to develop in Europe in the 17th century led to the emergence of the Industrial Revolution in England in the second half of the 18th century, and by the end of that century, the transition to machine-based production accelerated. As the industrialization process advanced further and spread rapidly to other sectors, it also caused the collapse process to begin in countries that could not follow scientific developments and their pace. Small and medium-sized enterprises can be considered to play an important role in regional economic sustainability and growth (Braun, McRae-Williams, & Lowe, 2005).

The increase in humanity's level of knowledge, along with the development of computers and software, contributes to leaner production planning. The improvement and advancement of control and automation systems with the help of technology have contributed to increased production of goods and services per unit time and continuous improvement in product quality. Industrialization models have evolved based on intelligence, experience, and knowledge, and have transformed into today's sectoral clustering organization.

In countries that have advanced in science and technology, enriched themselves by using and producing them, the cluster model is widely implemented. Although the cluster model has had many different definitions over the years, many of these definitions are based on Porter's (1990) definition. In this book, a cluster is expressed as a complementary association of a group of businesses and related institutions that are geographically close to each other and cooperate with one another.

The goal of clustering is to develop final products belonging to the sector in which the cluster operates, to create new brands, and to foster innovation. If the objectives of cluster member businesses remain limited to maintaining their existence within the supply chain, they will never have their own products and brands. They will remain stuck in a situation where they continuously work for others while earning little. Small and medium-sized enterprises in our country are generally in this situation (Güvenç, 2017).

It also seems quite difficult for large enterprises in Türkiye to have their own global brands and to engage in sustainable competition with the world. They cannot allocate sufficient resources to R&D and design. In these important areas, their dependence on their foreign partners is significant.

Our companies' competitors, having entered the world market through the cluster model, are in much more advantageous and stronger positions. Therefore, even our large companies are not on equal terms with their competitors and struggle to compete. On one side there is the cluster model, and on the other side there is only the large company and its supply chain.

The presence of successful clusters in developed countries, and the fact that healthy clusters serve as a driving force in their development, has led to increased interest in this model globally and, consequently, to its widespread adoption. While clusters spread, efforts to classify and define them have continued. For a cluster to be defined and its level of development determined, detailed data and statistical analysis are necessary. Data deficiencies make it difficult to reach a common consensus on the definition. Despite data shortcomings, intensive efforts continue worldwide to accurately define business clusters and their developments. It is important that the data collected is up to date to ensure accurate planning of the process (Güvenç, 2017). Clusters cannot be established with the goal of merely being part of a large industry or securing contracts from large companies.

As stated above, there are important issues to consider during the establishment process. These issues contribute to the local economy and help raise the region's level of prosperity. However, an undeniable reality is this: such formations do not have the capacity to produce final products or brands with their own unique designs.

Such beneficial collaborations should not be confused with the concept of clustering. The primary purpose of a cluster must be to produce significant products belonging to its sector, to develop

innovative solutions, and to create unique brands. These goals should not be limited to statements published on the websites of clusters. Trust-based relationships and a culture of cooperation among businesses play a critical role in clusters achieving their objectives. Otherwise, clusters may remain stagnant or develop slowly, leading over time to the cluster losing its function and dissolving.

Various methods can be used to determine whether a group of businesses can or cannot form a cluster. The most important of these methods are:

- Analyzing the inputs and outputs of services or products in the system,
- Calculating the level of concentration of the sector in a region,
- Identifying the network structure of the sector analytically and through observation,
- Examining the presence of universities in the region,
- Reviewing the existence of other institutions that can support the sector.

However, determining whether there is sufficient potential for the establishment of a business cluster in a region depends on the application of these methods. An important point to consider in this regard is the fact that businesses are living structures, and the state of the system reflected only mirrors the period when the data was collected. If the data was collected during the establishment phase of the cluster, it reflects one moment of that process; if during its development, one moment of its growth; or if during its decline, one moment of that downturn (Güvenç, 2017).

Strong clusters, whether they have developed from the bottom up based on local dynamics or been initiated top-down by the state, must have as their primary goal the creation of innovative products and brands. Clusters lacking innovation will not be able to create sustainable competition globally, and over time, they

will lose trust, members, and gradually weaken until they lose their function (Ketels, 2004).

Clustering efforts conducted in Ukraine, Lithuania, Latvia, and Estonia revealed that the lack of a strong culture of cooperation within the business world is one of the main barriers to clustering policies (Ketels, 2004). These studies also revealed another fact: although there is little difference in essence, each country has tried to interpret the concept of clustering differently. Therefore, the "Local Economic and Employment Development" (LEED) program has provided the following as a basic definition to eliminate this confusion: "A cluster is a community of enterprises working together in the same sector, horizontally and vertically interconnected, along with the institutions supporting this community." However, this definition should not lead to the conclusion that clustering efforts must be carried out in every situation. The success of a cluster depends on taking into account local dynamics, the level of development of the cooperation culture, and the priorities of the country.

Clusters with strong industrial ecosystems in Türkiye should not be confused with Small Industrial Sites (SIS), Organized Industrial Zones (OIZ), and Specialized Organized Industrial Zones (SOIZ) (Güvenç, 2017). These structures can be considered beneficial in protecting the environment from problems that may arise as a result of industrialization, preventing unplanned construction, making waste collection easier, facilitating the formation of cooperation networks, and increasing employment. The implementation of SIS in Türkiye began in the 1960s. The infrastructure and superstructure needs of these structures were supported by SIS building cooperative credits. OIZs also began to be established in our country in 1962 (Emmioğlu, 2013). These structures generally consist of small and medium-sized enterprises operating in different sectors. Looking at their sectoral distribution, machining, machinery and metal industry, composite materials, rubber, plastics, textiles, and ready-made clothing sectors stand out. Except for textiles and ready-made clothing, the production levels of companies are mostly at the spare parts and semi-finished product level. The

number of businesses producing final products is much fewer compared to others. This is because final products are generally produced by large companies together with the supply chains they support. On the other hand, specialized organized industrial zones consist of businesses focused on a single sector. However, these structures should not be confused with clustering. Clustering is a common struggle for regional development, raising prosperity, accessing high technology, and in short, ensuring future existence—it is a development model (Güvenç, 2017).

The goal of the cluster should be the development and production of key products and new products in its sector, and the roadmap of the cluster model to achieve the chosen goal should be realistically prepared according to the country's realities, legislation, support, and grant mechanisms. A realistic roadmap is of vital importance for the development, strengthening, and sustainability of the cluster. In this sense, clustering expresses a development process, and it can be considered that the ultimate aim of this process is the establishment of a healthy cluster. In this context, the difference between cluster and clustering can be explained as follows (Güvenç, 2017):

- A cluster is the existence of a strong ecosystem.
- Clustering expresses that the ecosystem is not static, but a dynamic process that constantly improves itself and adapts to new conditions.

A cluster project is not a study that will be concluded overnight, but rather a struggle for development and growth that must last for generations. The concept of clustering can be considered an expression that encompasses both the cluster model and the development process.

Actors of the Clustering Model

When examining the structures of clusters established and successfully operating in different sectors worldwide, certain common actors and relationships stand out. This structure is referred to in the literature as the **"triple helix"** (Porter,1990; Güvenç, 2017) and is visualized in Figure 1.

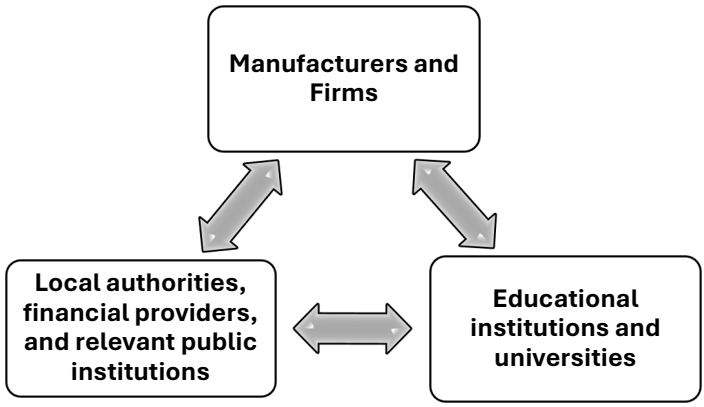

Figure 1.Triple Helix

When the main actors mentioned above are complemented by other important actors operating in the regions where clusters are formed, the extended actors that constitute the cluster—namely, the cluster council: Companies (related sector), Suppliers, Parts Manufacturers, Engineering Companies, Producers of Semi-Finished Products, Final Product Manufacturers, Exporters, Educational Institutions, Universities, Research Centers, Vocational Training Institutions, Financial Institutions, Ministry of Development, Ministry of Science, Industry, and Technology, TÜBİTAK, KOSGEB, Investment Banks, Service Providers for Enterprises, Infrastructure Providers, Chambers, Associations, relevant NGOs, and Professional Organizations, Local Governments, Public Institutions. These actors may vary slightly in detail depending on the needs of the sectors. In summary, every

institution/legal entity that can contribute to the development of the relevant sector and thus the region should be included in this list. In a broad sense, these actors constitute the cluster. When these actors begin to work together in harmony, trusting each other like a symphony orchestra, the cluster begins to form. Brands emerge from these harmonious and efficient structures. If there is no harmony, trust, and culture of cooperation among these actors, the structure turns into a heap. Heaps cannot produce high value-added products and cannot create a global brand (Güvenç, 2017).

Why Business Clustering is Important?

Innovation, high value-added, and knowledge-intensive products can only emerge from healthy clusters and industrial ecosystems that have reached critical mass. While carrying out all the necessary efforts to reach this goal, it is also considered important to impose a requirement for local contribution rates in every imported medium- and high-tech product. The level of technology within countries and the knowledge levels of firms makes it mandatory to follow this roadmap. The local contribution rates in imported products and public tenders can help achieve the ultimate goal in a shorter time. Otherwise, traveling the same road will inevitably take decades. This would cause a significant loss of time in the development of the country, and the cost of such a loss would also be inevitable. The concentration of interdependent firms through innovations, processes, products, and even common or complementary inputs is important in dominating markets in every industrialized country (Rosenfeld, 1997).

On the other hand, public and local government tenders carried out with realistic local contribution rates can be considered important in reducing the foreign trade deficit over time. In this sense, the most accurate address to determine realistic local contribution rates for medium- and high-tech products is sectoral clusters. However, local contribution rates in tenders should not be determined by local governments, public institutions, or bureaucracy. The most realistic rate can be obtained from clusters. Thanks to these rates, technology transfers in various sectors can be achieved over time. This method has been applied worldwide for many years and many conscious

countries benefit from it (Güvenç, 2017).

The establishment of a healthy cluster, with its social capital, self-dynamism, and technological gains obtained through local contribution rates in public procurements, will create the most suitable ground for reaching the final product and producing its own designs.

Healthy clusters are the locomotive of local development.

The development of a region or a country can only be possible with healthy clusters. Not only underdeveloped and developing countries but also developed countries need this model. In this sense, the clustering model is the guarantee of survival in the future. Today's developed countries must further develop the healthy clusters they have established in order to maintain their market share, because even developed countries are in fierce technological competition with one another (Güvenç, 2017).

In underdeveloped and developing countries, since there are no healthy clusters or strong industrial ecosystems, it can be considered that these countries are at a serious disadvantage in the technology race. Companies in these countries cannot compete with the healthy clusters in developed countries on their own, cannot settle permanently in the world market, and are therefore under great threat. Healthy clusters abroad, which threaten our individual companies, in fact threaten the future of underdeveloped and developing countries. Countries that have started the technology race far behind must accelerate their efforts to establish industrial ecosystems (healthy clusters) without wasting time (Güvenç, 2017).

For firms in Türkiye that produce at medium- and medium-high technological levels, it may be difficult to climb to the upper steps of the technology ladder with their own efforts. In this sense, transitioning to high technology, micro-technology, and nanotechnology requires highly skilled human resources and

significant financial resources. To conduct R&D at this level requires the establishment of infrastructure with machinery and equipment worth millions of lira, most of which must be imported, making it difficult for firms to manage this on their own. High-tech products can only be produced within industrial zones and supporting organizations, in other words, in ecosystems, namely healthy clusters (Güvenç, 2017).

Countries ranked in the top 16 in terms of economic size are in fierce competition with one another in every field. Falling behind their pace further weakens the position of poor and developing countries in the race. The real technology race is not between individual companies but among healthy clusters with vast ecosystems. Behind products that consistently capture large shares of the global market are not individual companies, but strong systems (Güvenç, 2017).

In the European Union, there are more than 2,000 strong clusters established in various sectors that have reached significant sizes in terms of data (EC, 2008). The number of such clusters continues to increase day by day. The established and successful clusters mentioned here belong to some EU countries. Similar structures can be observed in other countries ranked in the top 16 in terms of economic size. Globally, there are approximately 10,000 statistically advanced clusters. However, it is also observed that clusters formed in declining sectors disappear over time. There are many reasons for this disappearance. The most important are:

• The lack of trust among sector firms,

• The emergence of micro-nationalism among small regions,

• The inability of the state to introduce support policies, or the introduction of impractical ones.

In countries with advanced technology, rapid movement in this field is observed. Nanotechnology clusters have concentrated in

regions such as Arizona, Grenoble, Tampere, and Bavaria, supporting innovation and entrepreneurship (Arizona Nanotechnology Cluster, n.d.;Nanoinitiative Bayern, n.d. In addition, according to David Rejeski, Director of the Project on Emerging Nanotechnologies, there is no U.S. state that does not operate in the field of high technology (Project on Emerging Nanotechnologies, n.d.).

At the same time, in healthy clusters there are dozens of universities and technical schools supporting companies in developing products and conducting R&D. Against these strong systems, supported by public institutions that develop and implement appropriate support programs, it is difficult for SMEs to survive or compete for long periods on their own. Considering that 99% of companies in Turkey are SMEs and that approximately 75% of employment is in these enterprises, it may be difficult for Turkey's SMEs with fragile structures to withstand major technological developments. Moreover, these technological developments are rapidly strengthening over time. In this sense, reducing potential threats and risks and achieving success in the future is only possible by contributing to the formation of healthy clusters in every sector. For poor, developing, and developed countries alike, clustering can be seen as an indicator of the struggle for survival in the future. Therefore, at the center of this "sectoral clustering model" must be the "active university." This active university is vital for developing countries. Due to the broad scope of sustainability, research has evolved into diverse directions and proposals, involving a wide range of disciplines from sociology to engineering, geology to mathematics (Lee, & Zhou, 2022).

The Link Between Business Clustering and Sustainable Development

Sectoral clustering not only provides competitive advantage but also increases innovation and efficiency. Sustainable development, on the other hand, is a model of development that balances economic growth, environmental protection, and social equity.

It is becoming increasingly difficult for developing countries to achieve sustainable development. Today, international competition has significantly increased. Therefore, since the primary goals of SMEs in Turkey are not to make losses and to "survive," it is difficult for them to make high-cost investments such as digital transformation, transition to the green economy, circular economy, or zero carbon emission on their own. As previously emphasized, sectoral clustering is of great importance for their survival in business life. For this reason, Sectoral Clustering stands as an indispensable condition for developing countries to achieve Sustainable Development. Without the establishment of Sectoral Clusters, transitioning to a green economy and achieving social equity would be very difficult. Scott (2008) emphasized that institutions provide stability and meaning to social behavior and that cultures develop through structures and routines.

For Sustainable Development, it is not easy for governments to achieve their goals by preparing incentive packages, providing financing, and drafting regulations without developing Sectoral Clusters. Certain key issues must be taken into account. One of them is improving the problems faced by SMEs. The problem of not finding qualified staff must be solved as a priority. Without a skilled workforce, financial support alone will not be sufficient for the transformation of SMEs. Therefore, it is important that government support packages be harmonized with the current situation of Sectoral Clusters. SMEs can only climb the technology ladder step by step. They cannot leap three or five steps at a time. Preparing SMEs for the future, training them, and addressing their shortcomings can only happen within Clusters. Sustainability goals put pressure on businesses to initiate sustainability practices depending on their nature and characteristics (Lee, & Zhou, 2022).

Developed countries can more easily realize the digital transformation of SMEs, make them compatible with the green economy, and implement social equity because they have established sectoral clusters in every sector and continue to establish new ones rapidly.

"Countries can only achieve sustainable development through sectoral clusters."

Contributions of Sectoral Clustering to Sustainable Development

Resource Efficiency and Environmental Sustainability

Clustered firms optimize energy and raw material usage through shared infrastructure and resources. This helps reduce waste management and carbon footprint (Chertow & Park, 2023). There are various applications worldwide. The wind energy cluster in Denmark has been a pioneer in clean energy production and an example of sustainable industrialization (Porter & Kramer, 2011). Similarly, there exists the Northwest Germany Wind Turbine Cluster (Güvenç, 2017).

Innovation and the Development of Green Technologies

Clustering encourages R&D activities and contributes to the development of clean technologies. For example, technology companies in Silicon Valley support sustainable development by developing energy-efficient products (Albino, et al., 2023).

Employment and Social Welfare

Clustering increases the demand for skilled labor and reassures educated employment. It provides the training of qualified personnel as needed. This accelerates regional development while reducing income inequality. There are cases of such practices in Italy:

- **Modena Ceramic Cluster** – increased local employment and contributed to the socio-economic development of the region (Becattini, 1990).
- **Modena Automotive Cluster** – Home to Ferrari, Maserati, Ducati. High-tech, engineering-focused; design, production, and sub-industry integrated.
- **Prato Textile and Fashion Cluster** – More than 6,000 textile enterprises; leader in recycled fabric technology; SME-oriented production, strong supply chain.

- **Arezzo Jewelry and Gold Cluster** – Produces 30% of Italy's gold; combines craftsmanship and modern technology; high export rate.
- **Sassuolo Ceramic Cluster** – Center of ceramic tile and coating production; globally competitive; high automation and R&D.
- **Treviso/Veneto White Goods and Home Appliances Cluster** – Strong in small appliances and cooling systems; Arçelik has European investments in this region.

These clusters are mainly formed around SMEs. Studies show that sectors with the most clustering are fashion, automotive, ceramics, food, furniture, machinery, and jewelry. The regions with the highest clustering are Lombardia, Veneto, Tuscany, Emilia-Romagna, and Puglia (ISTAT – Italian National Institute of Statistics; OECD – Local Clusters in Global Value Chains, 2022; Italian Cluster Mapping Project).

Italy's clustering model is considered exemplary for Europe in terms of local development, exports, and competitiveness. Thanks to these Sectoral Clusters, per capita income in these regions is higher, social welfare increases, and income inequality decreases. Italy's success in clustering demonstrates strong cooperation among local actors, high-level integration of government, universities, and industry, as well as numerous projects. Furthermore, their export-oriented and innovative structure positively contributes to the country's foreign trade. Today, there are thousands of sectoral clusters in the European Union.

Sustainability in Supply Chain and Production

Clustered firms work with local suppliers, reducing logistics costs and carbon emissions. This situation enables to support the adoption of circular economy models (Ellen MacArthur Foundation, 2015). Sustainable production may also be implemented a cluster in effective way (Khan, et al. 2022).

Types of Clusters and Their Strategic Impacts for Regional Development

Examples of Strong Sectoral Clusters Worldwide and Their Strategic Impacts on Regional Development

Sectoral clusters include networks shaped by firms, suppliers, service providers, and local and public institutions that are interrelated to particular geographical region. These clusters accelerate regional development by fostering innovation, productivity, and competitive advantage. All over the word technology, healthcare, automotive, defense and aerospace, agriculture, finance, and pharmaceuticals are among the most outstanding strategic sectors where clustering is evident. In this section, significant sectoral clusters will be introduced and their strategic impacts on regional development will be argued

Prominent Sectoral Clusters Worldwide

Silicon Valley (USA) – Technology and Innovation

Silicon Valley is the world's most famous technology cluster. Developed under the influence of Stanford University, this region hosts global giants such as Google, Apple, Facebook, and Tesla. It supports to lead global technology via its entrepreneurial ecosystem, venture capital investments, and R&D activities (Saxenian, 1996).

Impact on Regional Development:

- Attracts highly skilled labor, raising the local standard of living.
- Encourages the emergence of innovative start-ups through university-industry collaboration.
- Increases tax revenues, strengthening local infrastructure.
- Draws significant foreign investment to the region.

Emilia-Romagna (Italy) – Automotive and Machinery Manufacturing

Emilia-Romagna is home to luxury automobile producers such as Ferrari, Lamborghini, and Maserati. The region is recognized for its network of small and medium-sized enterprises (Porter, 1998).

Impact on Regional Development:

- Supports local employment through specialized supply chains.
- Enhances the region's export capacity through high value-added production.

Basel (Switzerland) – Pharmaceuticals and Biotechnology

Basel hosts global pharmaceutical leaders such as Novartis and Roche. The region has a strong academic and industrial research infrastructure (Cooke, 2001).

Impact on Regional Development:

- Creates high-paying jobs in advanced technology fields.
- Has become a global hub in biotechnology and medicine.

Shenzhen (China) – Electronics and Manufacturing

Shenzhen is the world's largest electronics manufacturing cluster, home to companies such as Huawei, Tencent, and DJI. It is known for its rapid prototyping and manufacturing capabilities (Zeng, 2010).

Impact on Regional Development:

- Triggered rapid urbanization and infrastructure investments.
- Plays a central role in global supply chains.

Baden-Württemberg (Germany) – Engineering and Automotive

This region hosts world-renowned companies such as Mercedes-Benz, Porsche, and Bosch and is known for its high engineering and production standards (Storper, 1997).

Impact on Regional Development:

- Trains qualified workforce through the dual vocational education system.
- Strengthens Germany's economy through an export-oriented growth model.

Strategic Impacts of Sectoral Clusters on Regional Development

- Innovation and Competitive Advantage
  Clusters foster innovation by facilitating knowledge sharing and technology transfer, thereby making the region more competitive (Porter, 1990; Güvenç, 2017).

- Employment and Income Growth
  Competitive sectors producing high value-added goods attract qualified labor, increasing the inflow of experts to the region and boosting competitiveness. This mutually reinforcing process raises regional prosperity.

- University-Industry Collaboration
  Models such as Stanford University – Silicon Valley or ETH Zurich – Basel demonstrate how academic research is commercialized.

- Global Competitiveness

Cluster firms achieve a stronger position in international markets, increasing the region's exports. Sectoral clusters are the driving force of regional development. With the right policies (education, infrastructure, R&D incentives), they accelerate economic growth. Silicon Valley and Shenzhen exemplify how successful cluster models can be created on a global scale.

Benefits of Business Clustering for SMEs

Sectoral clusters are structures that shaped by firms, suppliers, service providers, and research institutions operating in the same or related industries in a specific geographic region. SMEs advantage from sectoral clustering in multiple ways, including competitive advantage, innovation, cost reduction, knowledge sharing, and market access.

Competitive Advantage and Collaboration

Clusters provide SMEs to work together and compete with larger firms. Collaboration with cluster members increases efficiency and reduces costs in joint procurement, logistics, and marketing. Research shows that clusters enable firms with competitive advantage and improve efficiency (Porter, 1998). Ketels (2003) analyzes the role of clusters in enhancing SME competitiveness. Güvenç (2017) indicates that cooperation enables to foster competitive advantage, which subsequently drives sectoral development, increases exports, and raises regional welfare.

Innovation and Knowledge Sharing

Clusters accelerate knowledge and technology transfer, enhancing SMEs' innovation capacity. Interaction with universities, R&D centers, and other firms promotes the emergence of new ideas and commercial products. This organized structure also attracts foreign investors. Breschi & Malerba (2001) discuss how clusters support innovation processes.

Audretsch & Feldman (1996) examine how clusters stimulate innovation, particularly for SMEs.

Cost Reduction and Economies of Scale

Clusters reduce SMEs' costs through shared infrastructure, collective procurement, and logistics cooperation. These savings provide opportunities for SMEs to invest in addressing deficiencies. Marshall (1920) explains how industrial clusters reduce costs by creating "location economies." Krugman (1991) notes that clusters provide economies of scale, enabling SMEs to achieve cost advantages.

Market Access and Branding

Clusters enable SMEs' access to national and international markets. Through collective branding, cluster members may reach markets that they could not access individually. The OECD (2007) report shows how clusters develop SMEs' export capacity. Enright (2003) indicates how clusters enable to provide integration into global value chains.

Access to Workforce and Talent Pool

Clusters attract skilled labor to the region, making it easier for SMEs to access talent. Vocational training centers can also be established to ensure existing employees are educated and certified (Florida, 2019). Florida (2019) argues that clusters attract the creative class, addressing SMEs' human resource needs. Saxenian (1996) explains how technology clusters attract talented labor with examples.

Access to Public Support and Finance

Clusters facilitate SMEs' access to public support programs and venture capital funds. Governments and international organizations offer special incentives for cluster projects. Shared problems identified within a cluster can be addressed more

effectively through large-budget projects supported by the public sector. Individually prepared projects may not be sufficient to resolve structural issues. The World Bank (2009) highlights how clusters ease access to finance. The European Commission (2008) stresses the importance of cluster support for SMEs.

In light of the above, sectoral clusters are vital structures that strengthen SMEs' competitiveness, encourage innovation, and reduce costs. Developing clustering policies is critical for the sustainable growth of SMEs. In this sense, sectoral clusters benefit SMEs directly while also contributing to income distribution, employment, attracting foreign investors, enabling new investments, and ultimately enhancing the country's exports.

Cluster-based development has the potential to enhance modularity and scalability; however, it requires strong coordination, standardization, and governance mechanisms to manage associated risks. Achieving the right balance between individual autonomy and overall alignment is the key to cluster success. In this context, the European Union has undertaken various initiatives to reduce risks and to strengthen inter-cluster collaboration, establishing online platforms that support sectoral cooperation. These platforms are designed to facilitate interaction among clusters and to promote knowledge sharing. Clusters and cluster policies have become a dominant paradigm in practice in the field of economic development (Wolman, & Hincapie, 2015).

The European Observatory for Clusters and Industrial Change (EOCIC) is an initiative of the European Commission's Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs. The Observatory provides a single access point for statistical information, analysis, and mapping of clusters and cluster policy in Europe, aimed at European, national, regional, and local policy-makers, as well as cluster managers and representatives of SME intermediaries.

What risks await SMEs, and producers of goods and services when sectoral clustering does not exist?

The presence of sectoral clusters enables SMEs and producers to grow sustainably and gain competitive advantage, whereas the absence of such structures can create significant risks. Sectoral clusters (industrial or regional collaborations) are structures that enhance the competitiveness of SMEs and producers, support innovation, and ensure resource efficiency. When these clusters are absent, firms may face the following risks:

Loss of Competitiveness

Clusters allow SMEs to act collectively, achieving cost advantages and sharing technological infrastructure; without these structures, firms may lose their competitive edge.

- Lack of Software and Hardware: The absence of shared infrastructure, R&D, and technology transfer provided by clusters.
- Loss of Economies of Scale: SMEs operating alone miss out on collective purchasing and cost advantages.
- Weakness in Global Markets: Firms unable to integrate into global supply chains become disadvantaged against international competitors.

Lack of Innovation and R&D

Sectoral clusters enhance innovation through university-industry collaborations and joint R&D projects; without clustering, firms may lag behind in technological and knowledge-based development.

- Lagging in Innovation: Without university-industry collaboration and joint R&D projects encouraged by clusters, SMEs may fall behind technologically.

- Insufficient Know-How Transfer: Knowledge sharing between firms decreases, slowing learning and development.

Marketing and Branding Challenges

Clusters provide members with collective marketing strategies and opportunities to strengthen brand value; without such support, SMEs face difficulties in market access and brand recognition.

- Restricted Market Access: Clusters provide wider market access through joint marketing and fairs. Without this support, SMEs struggle to reach markets.
- Lack of Brand Awareness: Clusters increase regional or sectoral brand value. Without them, SMEs have difficulty gaining customer trust.

Supply Chain and Logistics Risks

Clusters provide firms with alternative supplier networks and joint logistics solutions; without these, SMEs face risks in supply and transportation processes.

- Supplier Dependence: Without the alternative supplier networks offered by clusters, SMEs become dependent on a single supplier (e.g., production stops when raw material supply is interrupted).
- Increased Logistics Costs: Firms unable to benefit from shared logistics and storage solutions bear transportation and inventory costs alone.

Difficulty in Accessing Finance

Clusters support financial sustainability by providing members with access to government support, grants, and loans; without clustering, firms may struggle to secure investment and credit.

- Difficulty in Finding Investment and Loans: Clusters provide members with government support, grants, and credit opportunities. Without these networks, SMEs face difficulties in securing finance.
- Lack of Risk Sharing: Clusters share risks on a project basis. Without them, SMEs must bear investment risks alone.

Human Resources and Talent Management Challenges

Clusters improve workforce quality through talent pools and joint training programs; without clustering, firms face difficulties in finding skilled workers and developing existing employees.

- Difficulty in Finding Qualified Personnel: Clusters establish vocational training and talent pools. Without them, SMEs struggle to find skilled workers.
- Lack of Employee Development: Firms unable to benefit from joint training and certification programs cannot improve the competencies of their employees.

Regulatory and Sectoral Compliance Issues

Clusters follow sector-related legal changes and support compliance with standards; without these mechanisms, SMEs face difficulties in complying with regulations and quality standards.

- Inability to Adapt to Legal Changes: Clusters monitor sectoral regulatory changes and inform their members. Without this support, SMEs adapt late to new regulations.
- Detachment from Sectoral Standards: Clusters define quality and standards. Without them, SMEs fail to comply with international standards.

Conclusion

Achieving sustainable development is directly linked to the presence of strong sectoral clusters and the development of innovative, high value-added production capacity through these clusters. If strong sectoral clusters (healthy industrial ecosystems) cannot be established, countries will lose their future through brain drain, as intelligent, hardworking, and successful young people will not find satisfying employment opportunities. In such countries, production management becomes inefficient, product costs increase, the country loses its competitiveness and becomes dependent on foreign sources for medium-high and high technology. Producing high value-added products becomes extremely difficult, and innovation and R&D culture fails to develop. The strength of local economies can be thought of as dependent on the ability of local firms to consistently deliver commercially viable products, services and production processes, that is, to successfully innovate and adapt to changing markets and technologies (Romis, 2008). As a result, the country constantly runs a trade deficit, and per capita national income remains at low levels. For these reasons, achieving sustainable development has become even more challenging for developing countries today. Sustainable development can be considered as one of the fundamental and most important goals of worldwide politics (Derlukiewicz, Mempel-Śnieżyk, Mankowska, Dyjakon, Minta, & Pilawka, 2020).

At present, international competition has reached extremely tough levels. Therefore, since the primary goal of SMEs in Turkey is not to make a loss and merely to "survive," they cannot independently undertake costly investments such as digital transformation, transition to a green economy, circular economy, or zero carbon emissions. For this reason, sectoral clustering is of great importance for SMEs to remain active in business life. Consequently, sectoral clustering stands as an indispensable condition for developing countries to achieve sustainable development. Without the establishment of sectoral clusters, transitioning to a green economy and achieving social equity will be very difficult. In this context, active universities should be at the center of the sectoral clusters to be established.

References

Adebanjo, D. (2010, June). Business models and sustainability of e-clusters: A case study. In 2010 IEEE International Conference on Management of Innovation & Technology (pp. 1045-1049). IEEE.

Albino, V., et al. (2023). Green innovation in industrial clusters: Evidence from European regions. Journal of Cleaner Production, 402, 136789.

Arizona Nanotechnology Cluster. (2025). Clusters, innovation and entrepreneurship. Retrieved, October 07, from https:// www.arizona.edu/nanotechnology.

Audretsch, D. B., & Feldman, M. P. (1996). Innovative clusters and the industry life cycle. Review of industrial organization, 11(2), 253-273.

Braun, P., McRae-Williams, P., & Lowe, J. (2005). Small business clustering: Accessing knowledge through local networks. Journal of New Business Ideas and Trends, 3(2), 57-64.

Breschi, S., & Malerba, F. (2001). The geography of innovation and economic clustering: some introductory notes. Industrial and corporate change, 10(4), 817-833.

Chertow, M., & Park, J. (2023). Industrial symbiosis and the circular economy: A global review. Resources, Conservation & Recycling, 190, 106823.

Cooke, P. (2001). Regional innovation systems, clusters, and the knowledge economy. Industrial and corporate change, 10(4), 945- 974.

Derlukiewicz, N., Mempel-Śnieżyk, A., Mankowska, D., Dyjakon, A., Minta, S., & Pilawka, T. (2020). How do clusters foster sustainable development? An analysis of EU policies. Sustainability, 12(4), 1297.

Elkington, J. (1997). Cannibals with forks: The triple bottom line of 21st century business. New Society Publishers.

Emmioğlu, K. (2013.) Türkiye'nin Sanayileşme Dinamikleri, Sanayileşmenin Maddi ve Manevi Temelleri, Elips Kitap.

Enright, M. J. (2003). Regional clusters: what we know and what we should know. In Innovation clusters and interregional competition (pp. 99-129). Berlin, Heidelberg: Springer Berlin Heidelberg.

European Commission (2008). The Concept of Clusters and Cluster Policies and Their Role for Competitiveness and Innovation.

European Commission (EC). (2008). Towards world-class clusters in the European Union: Implementing the broad-based innovation strategy (SEC 2008). European Commission. https://ec.europa.eu

Florida, R. (2019). The rise of the creative class. Basic books.
Goodland, R. (1995). The concept of environmental sustainability. Annual review of ecology and systematics, 1-24
.
Güvenç, Z. (2017). Teknoloji Tufanına Karşı Nuh'un Gemisi Kümelenme. Teknoart Digital Ofset Reklamcılık Matbacılık. ISBN:978-605-67837-0-8

Greenpeace. (2025). Environmental reports and sustainability initiatives. Greenpeace International. Retrieved, October 05, from https://www.greenpeace.org/international/explore/.

Griggs, D., Stafford-Smith, M., Gaffney, O., Rockström, J., Öhman, M. C., Shyamsundar, P., Steffen, W., Glaser, G., Kanie, N., & Noble, I. (2013). Sustainable development goals for people and planet. Nature, 495(7441), 305–307. https://doi.org/10.1038/495305a

Gupta, J., & Vegelin, C. (2016). Sustainable development goals and inclusive development. International environmental agreements: Politics, law and economics, 16(3), 433-448.

IPCC-Intergovernmental Panel on Climate Change. (2021). Sixth Assessment Report (AR6): Climate Change 2021.

İstanbul Sanayi Odası (İSO). (2023). Sanayi ve ihracat istatistikleri. Retrieved, October 05, from https://www.iso.org.tr/

Khan, et al. (2022). Sustainable industrial clusters: A systematic literature review. Sustainable Production and Consumption, 30, 1-15.

Ketels, C. (2003, December). The Development of the cluster concept–present experiences and further developments. In NRW Conference on Clusters, Duisberg, Germany (Vol. 5). Conference.

Ketels, C. (2004). European Clusters, Structural Change in Europe – Innovative City and Business Regions. Haghbart Publication.

Krugman, P. (1991). Geography and Trade. MIT press.

Lee, S. H., & Zhou, Y. (2022). The outlook for sustainable development goals in business and management: A Systematic literature review and keyword cluster analysis. Sustainability, 14(19), 11976.

Marshall, A. (1890). 1920. Principles of economics. London: Mac-Millan, 1-627.

Meadows, D. H., Meadows, D. L., Randers, J., & Behrens, W. (1972). The limits to growth Universe Books. New York.

Nanoinitiative Bayern. (2025). Project of emerging nanotechnologies (PEN). Retrieved, October 10, from https:// www.nanoinitiative-bayern.de/en.html

OECD. (2021). OECD Green Growth Studies: Circular Economy in Cities and Regions.

OECD. (2005). Business Clusters: Promoting Enterprise in Central and Eastern Europe. OECD Publishing. ISBN: 92-64-00710-5.

OECD (2007). Competitive Regional Clusters: National Policy Approaches. Retrieved November 1, 2007, from https://www.oecd.org/en/publications/competitive-regional- clusters_9789264031838-en.html.

Porter, M. E. (1998). Clusters and the new economics of competition (Vol. 76, No. 6, pp. 77-90). Boston: Harvard Business Review.

Porter, M. E. (1990). The Competitive Advantage of Nations. London: Macmillan.

Raworth, K. (2017). Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist. Chelsea Green Publishing.

Rosenfeld, S. A. (1997). Bringing business clusters into the mainstream of economic development. European planning studies, 5(1), 3-23.

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin III, F. S., Lambin, E., ... & Foley, J. (2009). Planetary boundaries: exploring the safe operating space for humanity. Ecology and society, 14(2), https://www.ecologyandsociety.org/vol14/iss2/ art32/

Romis, M. (2008). Competitiveness of small enterprises: clusters, business environment and local development.

Sachs, J. D. (2015). The Age of Sustainable Development. Columbia University Press.

Sachs, W. (1993). Global ecology and the shadow of development. In: W. Sachs (Ed.), Global Ecology. A new arena of polital conflict (pp. 3–20). London: Zed Books.

Scott, W.R. (2008), Institutions and Organizations: Ideas and Interests, 3rd ed., Sage, Thousand Oaks, CA.

Saxenian, A. (1996). Regional advantage: Culture and competition in Silicon Valley and route 128, with a new preface by the author. Harvard University Press.

Storper, M. (1997). The Regional World: Territorial Development in a Global Economy. Guilford Press.

TÜSİAD. (2016). Sanayi 4.0 Raporu. Türk Sanayicileri ve İş İnsanları Derneği. Retrieved, December 12, from https:// tusiad.org/tr

Türkiye İstatistik Kurumu (TÜİK). (2023). İşgücü İstatistikleri. Retrieved, Deecember, 10 from https://www.tuik.gov.tr

Türkiye Odalar ve Borsalar Birliği (TOBB). (2023). KOBİ'ler ve İstihdam Raporu. Retrieved, December 15 from https:// www.tobb.org.tr

Türkiye İşveren Sendikaları Konfederasyonu (TİSK). (2023). Büyük Ölçekli Şirketlerde İstihdam Analizi. Retrieved, October 20, https://www.tisk.org.tr

Türkiye İstatistik Kurumu (TÜİK). (2023). İşletme büyüklükleri ve istihdam istatistikleri. Retrieved, October 13 from https:// www.tuik.gov.tr

Türkiye Odalar ve Borsalar Birliği (TOBB). (2023). Türkiye'de büyük ölçekli şirketler raporu. Retrieved, October 15, from https://www.tobb.org.tr

Türkiye İhracatçılar Meclisi (TİM). (2023). Türkiye ihracat performansı analizi. Retrieved, November 23, from https:// www.tim.org.tr

United Nations. (2015). Sustainable Development Goals (SDGs). United Nations. Retrieved November 20, 2015, from https://sdgs.un.org

U.S. Department of Commerce. (2012). The competitiveness and innovative capacity of the United States. U.S. Department of Commerce, Retrieved November 17, 2012, from https:// www.commerce.gov.

United Nations. (1987). Our common future: From one earth to one world. World Commission on Environment and Development (WCED). Oxford University Press.

United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development. United Nations.

World Bank (2009). Clusters for Competitiveness: A Practical Guide & Policy Recommendations.

World Bank. (2020). The Changing Wealth of Nations 2021: Managing Assets for the Future.

Wolman, H., & Hincapie, D. (2015). Clusters and cluster-based development policy. Economic Development Quarterly, 29(2), 135-149.

WWF. (n.d.). Reports on sustainability and environmental protection. Worldwide Fund for Nature.

Zeng, D. Z. (2010). Building Engines for Growth and Competitiveness in China: Experience with Special Economic Zones and Industrial Clusters. World Bank Publications.

CHAPTER II

UNDERSTANDING SUSTAINABILITY IN ORGANIZATIONAL CONTEXTS

Burak Efe BAHADIR[1]

[1]Independent Researcher, Ankara, Türkiye. E-mail: drburakbahadir@gmail.com, ORCID ID: https://orcid.org/0000-0001-9280-6690

Introduction

Previously, various organizations had only required financial success to continue operations. Even the idea of sustainable organizational development started to be discussed from different environmental, social, and economic perspectives. In this respect, the major motivation is that an organization should not only provide profits but also add to social welfare. Those companies that are concerned about social welfare can enhance their market positions by developing appropriate solutions. Our organization is committed to enhancing reputation and production efficiency and paying appropriate attention to shortcomings.

The Concept of Sustainability and Its Emergence

In the second half of the 20th century, the concept of sustainability received increasing attention as environmental problems became a priority on the global agenda. The report "The Limits to Growth," published by Meadows et al. (1972), emphasized that, due to the limitations of natural resources, sustained economic growth is impractical, thus leading the discussion on sustainability. The Brundtland Report further advanced these dialogues, defining sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs," and proposed the most widely accepted strategy

in the literature (World Commission on Environment and Development [WCED], 1987). In the 1990s, Elkington proposed a model that explored sustainability issues not only from an economic perspective but also from environmental and social ones. This model is called the "triple bottom line" model and recommends analyzing the problem from a broader perspective.

Research has indicated that the debate about sustainability is essentially evolutionary in nature, with the debate assuming different dimensions over time and representing various schools of thought. Even sustainable development is interpreted differently depending on the school of thought. For instance, in a 2005 study, Hopwood, Mellor, and O'Brian indicated that sustainability could be viewed from the perspective of "weak sustainability" and "strong sustainability" and noted that the environment and society could not be ignored. It follows, therefore, that sustainability is not just a question of definition, but also essentially a political issue representing people's values and priorities.

Nowadays, sustainability pertains to an important part of corporate strategic planning. The 2015 analysis by Lozano showed that every factor influences the sustainability of a company, and at the same time, the economic, social,

and environmental dimensions are very important for long-term success. A 2017 study by Baumgartner and Rauter also underlined that sustainable development strategies are not only good for the environment but also contribute to the increased ability of companies to respond to crises and improve their competitiveness. These studies thus documented that firms view sustainable development as a strategic imperative rather than merely "do as they please."

Recent studies have shown that the importance of sustainability in the field of strategic management and business is becoming increasingly prominent. According to research by Bansal and Song (2017), in the last two decades, research methods and theoretical strategies in this field have developed significantly and have shown a trend of diversification. Originally considered as an environmental problem, sustainability has now become a comprehensive perspective that covers the economic, environmental, and social responsibilities of companies. (Hopwood et al., 2005; Lozano, 2015; Baumgartner & Rauter, 2017; Bansal & Song, 2017).

The Emergence of Organizational Sustainability

The discussion of sustainability has moved from being social and environmental to an organization's manner of conducting business. Hence, an organization needs to consider profit as well as the impact of its activities on the

environment and its responsibilities towards society. Hopwood, Mellor and O'Brian (2005) supported this view by stating that if organizations do not look into the environment and society, it is also impossible to speak of a sustainable future. This view provided further insight that organizations need to address not only economic benefits but also other types of responsibilities.

Since the beginning of the 21st century, sustainability has gained more attention from companies and taken up a prominent position in their strategies. As Lozano (2015) indicated in his research, this is not only due to external pressure but also in close relation to the internal needs of the company. In other words, sustainability shifted from voluntary social responsibility to strategic necessity.

In addition, through sustainability, organizations not only protect the environment but also build their innovative capacity and the trust of stakeholders. Baumgartner & Rauter (2017) have asserted that this assists the companies in lowering environmental risks and creating new opportunities.

Bansal and Song (2017) emphasize that research on sustainability in the field of organization and strategy has gained considerable momentum over the past twenty years. The companies want to be ecologically, socially and economically balanced, and also to further

develop research on these topics. Thus, sustainability developed into a strategic approach that strengthens the credibility of companies and enables them to create value in the long term (Hopwood et al., 2005; Lozano, 2015; Baumgartner & Rauter, 2017; Bansal et al., 2017).

The Concept of Organizational Sustainability

Corporate sustainability means that companies should manage economic, environmental, and social problems together and in balance to survive in the long term. According to Lozano's study (2015), companies do this not only as a result of pressures but also due to their own internal strategic needs. Some studies show that corporate sustainability actually emerged from areas such as corporate social responsibility and environmental management but has gradually begun to develop its specific theories (Montiel & Delgado-Ceballos, 2014). In addition, when making sustainability decisions, there has to be a balance between economic success, environmental sentiments, and a social component (Hahn, Figge, Pinkse & Preuss, 2010). This indicates that stability is no longer a discretionary act but an issue that companies must address strategically. In practice, corporate sustainability means that companies have to develop different strategies to achieve a competitive advantage, build trust with customers and other stakeholders, and avoid harming the environment.

Sustainability strategies do not protect the environment alone but they also strengthen the innovative capacity, resilience, and stakeholder relationships of companies (Baumgartner & Rauter, 2017).

Corporate sustainability should take into consideration not only risk reduction in the traditional sense, but also its transformational role in solving social problems (Dillick & Maff, 2016).

A stable business model can bring double economic and environmental benefits to an organization; therefore, it is directly related to the stable growth of the organization (Schaltegger, Lüdeke-Freund and Hansen, 2012). This perspective shows that organizational stability is not just a short-term cost, but a strategy that helps create value in the long term.

The growth of organizational stability has also revealed some contradictions. Montiel and Delgado-Ceballos (2014) emphasized that research in this area is in its infancy and global standards have not yet been established, especially in the field of measurement standards. This article highlights the contradiction between economic, environmental and social goals in the context of sustainable organizational development, and shows that the simultaneous achievement of these multiple goals can lead to major managerial difficulties in the organization (Hahn, Pinkse

Preuss and Figge, 2015). This shows that sustainable growth is possible not only because of technological disruptions, but also needs to be recognized as valuable within the framework of the decision-making process.

A recent literature review shows that organizational sustainability is of paramount importance in strategic management and organizational theory, Bansal and Song (2017) believe that research on corporate sustainability is based on research on sustainable growth, but as companies seek to balance environmental, social, and economic factors, their research has shown unique and distinctive features.

According to Diouf and Boyral (2017), stability reporting could improve corporate openness and accountability, therefore making them more reliable. This proves that corporate stability is no longer left to the discretion of a company's friends but has become the major avenue through which confidence and eventual long-term recovery of companies are effected.

Dimensions of Organizational Sustainability

A company's sustainable growth means a balanced solution to economic, environmental, social, and cultural issues to ensure long-term sustainability. This area often uses a "three-pronged baseline" model representing the

three dimensions of economy, environment, and society (Florea, Cheung and Herndon, 2013; Nawaz and Koç, 2018). However, as recent studies have shown, cultural and management issues are equally important (Uzden and Bozkurt, 2023; Sezen-Gultekin and Argon, 2020).

Therefore, the sustainable growth of companies is limited not only by economic, environmental, and social issues but also by cultural and management issues. Thus, companies can not only achieve good results in the short term but also fulfill their social and environmental tasks in the long term, thus gaining trust. We will discuss these topics in more detail below.

Economic Sustainability

Economic stability means that a business must be financially stable and use resources rationally in order to survive and develop in the long term. This means not only making a profit, but also controlling costs, reducing potential risks and planning future investments. Isaksson (2005) touched on this topic from the point of view of quality costs and noted that losses, caused by poor quality, they seriously interfere with the long-term success of the business Turkish studies also show that companies are paying more attention to the rational use of resources and cost reduction, especially during the crisis (Gedik, 2020).

Moreover, a firm needs to be economically stable so that customers and friends can have confidence in it. As Nawaz and Koch (2018) establish, economic activity needs to be not only useful but also a source of long-term value and benefits for society. Therefore, this will make the firms strong enough to resist any market fluctuation and develop some sort of competitive advantage. In general, economic stability signifies that firms not only need to take care of today's interests but also plan for the benefits of future generations.

Environmental Sustainability

Environmental stability refers to the protection of natural resources, maintenance of ecological balance, and prevention of environmental damage by enterprises. The main principles of this work include reduction of CO2 emission, increase of energy efficiency, and efficient use of garbage. According to Prasad, Mishra and Bapat (2019), it is asserted that environmental innovation increases the sustainability of a business and provides a competitive advantage. Environmental stability refers to keeping natural resources continuous, protecting biodiversity, and maintaining ecosystem balance. Today, good environmental success has not only become a social responsibility of corporations but also an important strategy to gain a competitive advantage for companies (Prasad, Mishra and Bapat, 2019).

Besides, environmental sustainability practices have been proved to enhance social acceptance and increase citizen satisfaction, especially in such government institutions like municipalities (Yazır, 2024).

It also necessitates the integration of environmental strategies into organizations in addition to the introduction of environmentally sound production methods. In this context, while organizations with high environmental achievements can reduce environmental risks, they can also create a reliable and responsible image in the eyes of friends. The key elements for improving environmental sustainability involve improving energy efficiency and using renewable resources (Nawaz & Koç, 2018). For this reason, environmental stability is considered a necessary condition for the long-term health of the organization.

Social Sustainability

Social stability is a dimension that concerns employee health, equal opportunities, occupational safety, and social contribution. Ary and Ergin (2018) mention that social responsibility for enterprise sustainable development is among the fundamental elements in the strengthening of the legitimacy of the organization. According to Strenitserova and

Akhimsky (2019), satisfaction of the workers is the very condition for enterprise sustainable development, and social stability can contribute to an increase in the efficiency of work and loyalty of the staff. Social stability means that companies must fulfill their obligations not only to internal partners but to society as well. It means giving employees good working conditions, equal opportunities for all, treating employees justly, and benefiting society. Fair relations with employees and other partners according to its Code of Ethics are to be established by a company as well (Arı & Erin, 2018; Strenitzerova & Achimský, 2019).

Upcoming research conducted in Türkiye also shows that social stability is essential for the long-term success of companies, in particular, programs such as education, healthcare, and social development can strengthen the bond between companies and society (Sezen-Gültekin & Argon, 2020). Social stability is closely linked to the payment of fair wages, the protection of workers' rights and interests, and the observance of equality. That is, enterprises focused on social issues can not only earn higher incomes, but also gain the trust and respect of society.

Cultural Sustainability

Cultural stability means the commitment to preserve and preserve the values, traditions, and cultural diversities of

its place of business. As noted by Geziukara (2019), the cultural sensitivity of enterprises and a focus on diversity will increase employee loyalty, making it easier for companies to adapt to market changes. Cultural stability is crucially important in the service sector, where this condition promotes the development of customer relations and social communications. Uzden and Bozkurt (2023) also noted that the cultural dimension strengthens the bond of companies and society. In general, companies should pursue the appropriate policy of preserving values, traditions, and diversity in the communities where they operate. This helps increase company loyalty, especially in the service sector, and secures success in the long term.

It ensures that in this era of globalization, the local values will not be lost. For huge enterprises where the employees belong to different cultures, the preservation of this diversity is especially important. In Türkiye, if companies can take into consideration the local culture comprehensively enough during making decisions, they will be easier to perceive in society and their authority will be higher. According to Sezen-Gültekin & Argon (2020), cultural stability is one of the most effective factors that can determine the long-run success of the corporation and have a positive influence on the economy, the environment of the enterprise, and the society as well.

Managerial Sustainability

Management stability refers to a comprehensive consideration of economic, environmental, social, and cultural factors in the company's management process. Artuner Ozder (2018) noted that reliable management, proper strategic planning and effective communication with friends are necessary. Demirbilek and Cetin (2017) believe that sustainability principles should be integrated into the decision-making process. In general, enterprises should not only look at profits, but also fulfill their obligations to the environment from the very beginning and society. Managerial sustainability means evaluating these different issues together and making decisions based on long-term sustainability goals (Artuner Özder, 2018; Demirbilek & Çetin, 2017).

It also implies that companies have to be transparent, compliant with ethical rules, and communicative with their stakeholders. Research conducted in Türkiye proves that managerial sustainability enhances the resistance of firms to crises and makes them more flexible over the long term. (Yazır, 2024). For this reason, managerial sustainability is treated as a crucial factor in an organization's capability for adaptation to changes in ecological and social environments.

Table 1. Sustainability Dimensions

Dimension	Definition	Featured Element	Resource
Economic Sustainability	Organizations' pursuit of financial stability and efficient use of resources to ensure their long-term existence.	Balance between profit and cost, risk management, long-term investment, stakeholder trust.	Isaksson (2005); Gedik (2020); Nawaz & Koç (2018)
Environmental Sustainability	Protection of natural resources, reduction of environmental impacts, and maintenance of ecological balance.	Reduction of carbon emissions, energy efficiency, waste management, renewable resources.	Prasad, Mishra & Bapat (2019); Nawaz & Koç (2018); Yazır (2024)
Social Sustainability	Development of employee well-being, social equality, and fair relations with stakeholders.	Employee satisfaction, equal opportunities, fair wages, and contribution to society.	Arı & Ergin (2018); Strenitzerová & Achimský (2019); Sezen-Gültekin & Argon (2020)
Cultural Sustainability	Organizations' protection and preservation of social values, traditions, and cultural diversity.	Cultural diversity, preservation of local values, employee commitment, social legitimacy.	Gözükara (2019); Uzden & Bozkurt (2023); Sezen-Gültekin & Argon (2020)
Managerial Sustainability	Integrated consideration of all dimensions in management processes.	Strategic vision, leadership, stakeholder participation, transparency, and crisis resilience.	Artuner Özder (2018); Demirbilek & Çetin (2017); Yazır (2024)

Characteristics of Organizational Sustainability

Organizational sustainability is not limited to ensuring the continuity of economic performance; it also requires a holistic Strategy to managing environmental, social, and cultural responsibilities. While the concept is often examined in the literature within the framework of the Triple Bottom Line, encompassing economic, environmental, and social dimensions, current Strategies suggest that organizational sustainability encompasses a broader framework (Lozano, 2008; Florea, Cheung & Herndon, 2013). In this context, one of the key features of an organization is its ability to balance short-term financial interests with long-term social and environmental obligations (Gultekin, 2019).

Another aspect of organizational sustainability encompasses institutional and ethical aspects. Since organizations are not recognized not only by economic actors, but also by social institutions, compliance with ethical principles, maintaining openness and taking responsibility are fundamental elements of sustainability (Lozano, 2015; Montiel & Delgado-Ceballos, 2014). As noted in the literature, it is important to distinguish organizational sustainability from the three dimensions of system, finance and ethics and integrate these elements into organizational management (Gultekin, 2019). This

perspective requires companies to consider not only profits, but also relevant values and obligations to society.

To make sure of sustainable growth, companies have to take into consideration many factors from all sides: Environmental, economic, social expectations, and cultural values must be recognized as common. Companies' vision of sustainable growth has gone beyond the traditional "three-fold basic" model, adding new areas such as culture and management, and has become more advanced (Sezen-Gultekin & Argon, 2020; Uzden & Bozkurt, 2023). In addition, the exercises show that a company's sustainable growth assessment should start from both aspects of culture and management, not only from the three aspects of the environment, society, and economy (Gültekin, 2019).

Sustainable growth is driven by not only the company's internal affairs but also the relationship between the company, its friends, and society. The company's values are the basis of practicing sustainable growth, according to Florea, Cheung and Herndon (2013), and only by insisting on the operation of its values can a company genuinely grow sustainably. Most important, sustainable growth can help companies gain social trust and improve your long-term social reputation. In general, consistency is not only a management style but

also broad understanding, which can allow companies to fit in ethical, cultural, and social values in the long term.

The Concept of Sustainable Human Resources Management

Sustainable Human Resource Management (S-HRM) refers to a company's human resource management activities with consideration for environmental, social, and economic benefits. In this management model, employee performance assessments depend not only on their ability to work, but also on their contribution to the environment and society (Florea, Cheung & Herndon, 2013) noted that corporate values are the foundation of sustainable human resource management and emphasized that these values should be reflected in business processes so that companies we could achieve long-term success. Some Turkish exercises (Acar, 2021) also show that the practice of using human resources is now at the level of environmental and social challenges. In general, this issue is receiving more and more attention not only abroad, but also in my country.

S-HRM is a holistic strategy aimed at long-term health for both employees and enterprises. Economic, social, and environmental factors are considered while devising a human resource strategy. This enables the enterprise to work effectively in a brief period but also ensures that working for a longer period of time does not pose a threat

to the environment as well as society. The strategy also comprises recruitment, retention, and sacking socially responsible, economically stable, and long-term employees (Ehnert et al., 2016; Ehnert, 2006) commented that the concept of sustainable human resource management encompasses ways through which the internal and external impacts can be managed, which enables companies to establish a work environment that is fair as well as supportive, thereby enhancing employee loyalty and health (Flamini & Gnan, 2023).

S-HRM is considered a new and upper stage of human resource management. Until recently, human resources had been regarded merely as an instrument for the company to generate profits, which resulted in stress, burnout, and work-life imbalance of the employees (Esen, 2018). Such problems gave birth to S-HRM, which regards human resources as a renewable resource, creative, and of high value. It thus focuses on employee retention, development, and renewal (Stankevičiūtė & Savanevičienė, 2018; Ehnert, 2009). Participationist management style is also supported to help employees in balancing work-life and personal life responsibilities (Zaugg, Blum & Thom, 2001). In other words, sustainable human resource management is a more humane and holistic approach that benefits both the company and the employee long-term.

Green Human Resources Management within the Framework of Sustainability

As a result of sustainability thinking, there emerged Green Human Resource Management, or briefly Green-HRM. This Strategy says that firms should not only make money but also add their social and, in particular, environmental responsibilities to their business decisions. With the increase in natural resource depletion among other environmental problems, human resources policies have to conform to environmentally friendly strategies. Green-HRM will help companies incorporate into their human resources practices important issues that are of interest to society and the environment in employee training and duties. The aim is to reduce ash emissions from enterprises and individuals, making workers participate in the protection of the environment. Environmental awareness may not only reduce the cost of a company but also increase brand awareness.

For people's resources management to be effective, people's resources departments must coordinate all actions with environmental strategies. This is first reflected in the recruitment process; selection and recruitment should be carried out by those who care about the environment and have the appropriate knowledge and skills (Zahrania, 2022). In addition, classes should be held to improve workers'

understanding and understanding of environmental issues (Singh & Rao, 2016). At the same time, rewards and incentives should be created to achieve environmental goals. Well-performing workers receive economic or other rewards (Zhu & Sarkis, 2004; Renwick et al., 2013). The management of the human resources of the Christmas tree can provide employees with more autonomy and encourage them to participate more actively in their work, which helps to better solve environmental problems (Tarik et al., 2016; Manzur et al., 2019). Using this method, companies can increase employee loyalty and achieve greater success in long-term sustainable development (Rani & Mishra, 2014; Hosain & Rahman, 2016).

Results of Sustainable Human Resources Management

S-HRM exceeds traditional human resource methods and can deliver a number of long-term benefits. With the Strategy, companies may earn not only short-run but also long-run profits and secure their survival. Behaviors that help employees adapt more easily to change develop and make companies more resistant to crises. In addition, S-HRM allows companies to attract and hold on to very talented and valuable employees in the long run and thus provides a significant competitive advantage. This approach also allows the reduction of human resources risks

by reducing employee turnover (Ahmić & Smajlović, 2022; Strenitzerová & Achimský, 2019; Kramar, 2014). From the social point of view, S-HRM improves the quality of communication between different hierarchical levels inside the organization and increases the efficiency of inter-employee relationships accordingly (Kramar, 2014). Thus, organizations can become preferred employers in the sector and attract more qualified candidates (Tekin, 2022; Kramar, 2014).

When evaluated in terms of individual and environmental outcomes, S-HRM sees increasing employee well-being and commitment as a primary objective (Flamini & Gnan, 2023; Kramar, 2014). The results obtained at the individual level contribute to establishing a harmonious work-life balance by prioritizing employee job satisfaction, motivation, and competency development (Zaugg et al., 2001; Tekin, 2022; Kumar et al., 2020). In this context, flexible work arrangements support the psychological well-being of employees and help reduce negative consequences such as burnout and job stress resulting from intense workload (Guerci & Pedrini, 2014; Flamini & Gnan, 2023).

Environmental outcomes are directly linked to organizations fulfilling their ecological responsibilities. In this context, S-HRM (HRM) practices encourage the conscious and economical use of natural resources

such as energy, water, and paper (Kramar, 2014; Kumar et al., 2020). Employees' adoption of this environmental awareness supports the development of green products and services and contributes to the reduction of ecological costs arising from activities such as business travel (Tekin, 2022; Kramar, 2014). Consequently, S-HRM (HRM) contributes to the sustainability of both human resources and stakeholders by implementing HR strategies and practices that control negative side effects and undesirable feedback from a long-term perspective both within and outside the organization (Ehnert et al., 2016).

Conclusion

The concept of organizational sustainability focuses on the continuity of organizations, not for a specific time period. Therefore, it is closely related to the goal of successful operation and financial strength of an organization. It can be regarded as a business model that enables an organization to be prepared against future risks, protect its resources in the long term, and contribute to society (Colbert & Kurucz, 2007). It should be considered that organizations strive to create a sustainable organizational culture that takes environmental and social policies into consideration as well as the financial performance they develop their sustainability policies (Eccles, et al. 2012).

References

Acar, S. (2021). Örgütsel Öğrenmenin Sürdürülebilir İnsan Kaynakları Yönetimine Etkisi: BIST Sürdürülebilirlik Endeksinde Yer Alan Firmalar Üzerine Bir Araştırma. Doktora Tezi, Afyon Kocatepe Üniversitesi Sosyal Bilimler Enstitüsü, Afyonkarahisar.

Ahmić, A., & Smajlović, S. (2022). Sustainable Human Resource Management Relationship with the Human Resource Risk Reduction. *Economic Review-Journal of Economics and Business*, 20(2), 65-78. DOI: https://doi.org/10.51558/2303680X.2022.20.2.65

Al-Shammari, A. S., Nawaz, N., & Tayyab, M. (2022). Green human resource management and sustainable performance with the mediating role of green innovation: A perspective of new technological era. *Frontiers in Environmental Science*, 10, 901235. https://doi.org/10.3389/fenvs.2022.901235

Arı, G., & Ergin, E. (2018). Kurumsal sürdürülebilirlik kapsamında işletmelerin sorumlulukları. *İşletme Araştırmaları Dergisi*, 10(2), 1–15. https://doi.org/10.20491/isarder.2018.450

Artuner Özder, M. (2018). İşletmelerde yönetsel sürdürülebilirlik uygulamaları. *İşletme ve İktisat Çalışmaları Dergisi*, 6(3), 1889–1902. https://doi.org/10.20491/jibs.2018.238

Bansal, P., & Song, H. C. (2017). Similar but different: Corporate sustainability research and sustainable development research. *Organization & Environment*, 30(2), 119–139. https://doi.org/10.1177/1086026616680685

Baumgartner, R. J., & Rauter, R. (2017). Strategic perspectives of corporate sustainability management to develop a sustainable organization. *Journal of Cleaner Production*, 140(1), 81–92. https://doi.org/10.1016/j.jclepro.2016.04.146

Cho, H., Lee, P., & Shin, C. H. (2019). Becoming a Sustainable Organization: Focusing on Process, Administrative Innovation and Human Resource Practices. *Sustainability*, 11(13), 3554. DOI: https://doi.org/10.3390/su11133554

Chowdhury, S. R., Anwar, S. M., Jahan, I., & Rony, M. R. I. (2025). Aspects and practices of green human resource management. *Future Business Journal*, 11(1), 67. https://doi.org/10.1186/s43093-025-00567-x

Colbert, B. A., & Kurucz, E. C. (2007). Three conceptions of triple bottom line business sustainability and the role for HRM. *People and Strategy*, 30(1), 21-29.

Demir Uslu, Y., & Kedikli, E. (2017). Sürdürülebilirlik kapsamında Yeşil İnsan Kaynakları Yönetimine Genel Bir Bakış. *Üçüncü Sektör Sosyal Ekonomi*, 52(3), 66-81.

Demirbilek, T., & Çetin, E. (2017). Sürdürülebilir girişimler ve yönetsel sürdürülebilirlik. *Uluslararası Yönetim İktisat ve İşletme Dergisi*, 13(3), 152–168. https://doi.org/10.17130/ijmeb.2017.3

Diouf, D., & Boiral, O. (2017). The quality of sustainability reports and impression management: A stakeholder perspective. *Accounting, Auditing & Accountability Journal*, 30(3), 643–667. https://doi.org/10.1108/AAAJ-04-2015-2044

Dyllick, T., & Muff, K. (2016). Clarifying the meaning of sustainable business: Introducing a typology from business-as-usual to true business sustainability. *Organization & Environment*, 29(2), 156–174. https://doi.org/10.1177/1086026615575176

Eccles, R. G., Ioannou, I., & Serafeim, G. (2012). *The impact of a corporate culture of sustainability on corporate behavior and performance* (Vol. 17950). Cambridge, MA, USA: National Bureau of Economic Research.

Ehnert, I. (2006). Sustainability Issues in Human Resource Management: Linkages, Theoretical Approaches, and Outlines for an Emerging Field. Paper prepared for 21st EIASM SHRM Workshop, March 28th-29th, Aston, Birmingham.

Ehnert, I. (2009). Sustainability and Human Resource Management: Reasoning and Applications on Corporate Websites. *European Journal of International Management*, 3(4), 419-438.

Ehnert, I., Parsa, S., Roper, I., Wagner, M., & Muller-Camen, M. (2016). Reporting on Sustainability and HRM: a Comparative Study of Sustainability Reporting Practices by the World's Largest Companies. *The International Journal of Human Resource Management*, 27(1), 88-108. https://doi.org/10.1080/09585192.2015.1024157

Esen, D. (2018). Sürdürülebilir İnsan Kaynakları Yönetimi: Türkiye Bağlamında Bir Araştırma. Doktora Tezi, Dokuz Eylül Üniversitesi, İzmir.

Esen, D. (2018). Sürdürülebilir İnsan Kaynakları Yönetimine Genel Bir Bakış. *Journal of Current Researches on Business and Economics*, 8(1), 85-104.

Flamini, G., & Gnan, L. (2023). Sustainable HRM. In A. Kuźniarska, K. Mania, & M. Jedynak (Eds.), *Organizing Sustainable Development* (pp. 172–186). New York, NY: Routledge.

Florea, L., Cheung, Y. H., & Herndon, N. C. (2013). For all good reasons: Role of values in organizational sustainability. *Journal of Business Ethics*, 114(3), 393–408. https://doi.org/10.1007/s10551-012-1355-x

Gedik, E. (2020). Çevresel sürdürülebilirlik ve finansal boyut. *Ekonomi ve Yönetim Araştırmaları Dergisi*, 9(2), 195–210. https://doi.org/10.11616/j.econman.2020.197

Gözükara, E. (2019). Örgütsel sürdürülebilirlik ve sosyo-kültürel farkındalık. *İşletme ve Yönetim Araştırmaları Dergisi*, 8(1), 20–30. https://doi.org/10.20491/jbmr.2019.102

Guerci, M., & Pedrini, M. (2014). The Consensus between Italian HR and Sustainability Managers on HR Management for Sustainability-Driven Change. *The International Journal of Human Resource Management*, 25(13), 1787-1814. https://doi.org/10.1080/09585192.2013.860388

Hahn, T., Figge, F., Pinkse, J., & Preuss, L. (2010). Trade-offs in corporate sustainability: You can't have your cake and eat it. *Business Strategy and the Environment*, 19(4), 217–229. https://doi.org/10.1002/bse.674

Hahn, T., Pinkse, J., Preuss, L., & Figge, F. (2015). Tensions in corporate sustainability: Towards an integrative framework. *Journal of Business Ethics*, 127(2), 297–316. https://doi.org/10.1007/s10551-014-2047-5

Hosain, S., & Rahman, S. (2016). Green Human Resource Management: A Theoretical Overview. *Journal of Business and Management.*

Isaksson, R. (2005). Economic sustainability and the cost of poor quality. *Total Quality Management & Business Excellence*, 16(6), 761–771. https://doi.org/10.1080/14783360500078254

Kesen, M. (2016). İşletme Yönetiminde Sürdürülebilir İnsan Kaynakları Yönetiminin Yeri ve Önemi. *İnsan ve Toplum Bilimleri Araştırmaları Dergisi*, 5(3), 554-573.

Koç, İ. Ö. (2015). *Kurumsal Yönetim ve Sigortacılık Sektörü*. Ankara: Nobel Yayıncılık.

Kramar, R. (2014). Sustainable Human Resource Management: Conceptual Frameworks. *9th International Symposium on Sustainable Leadership* (pp.106-114), Salzburg.

Lämsä, A. M., Heikkinen, S., & Pučėtaitė, R. (2023). Social Sustainability, Leadership and Human Resource Management. *South Asian Journal of Business and Management Cases*, 12(1), 7-13.

Lin, Z., Gu, H., Gillani, K. Z., & Fahlevi, M. (2024). Impact of green work–life balance and green human resource management practices on corporate sustainability performance and employee retention: Mediation of green innovation and organisational culture. *Sustainability*, 16(15), 6621. https://doi.org/10.3390/su16156621

Lozano, R. (2008). Envisioning sustainability three-dimensionally. *Journal of Cleaner Production*, 16(17), 1838–1846. https://doi.org/10.1016/j.jclepro.2008.02.008

Lozano, R. (2015). A holistic perspective on corporate sustainability drivers. *Corporate Social Responsibility and Environmental Management*, 22(1), 32–44. https://doi.org/10.1002/csr.1325

Malaska, P. (1997). *Sustainable Development as Post-Modern Culture*. FUTU-publication 1/97.

Mandip, G. (2011). Green HRM: People Management Commitment to Environmental Sustainability. *Research Journal of Recent Sciences*, 1, 244-252.

Manzoor, F., Wei, L., Bányai, T., Nurunnabi, M., & Subhan, Q. A. (2019). An Examination of Sustainable HRM Practices on Job Performance: An Application of Training as a Moderator. *Sustainability*, 11(8), 2263. https://doi.org/10.3390/su11082263

Montiel, I., & Delgado-Ceballos, J. (2014). Defining and measuring corporate sustainability: Are we there yet? *Organization & Environment*, 27(2), 113–139. https://doi.org/10.1177/1086026614526413

Nawaz, W., & Koç, M. (2018). Development of a systematic framework for sustainability management of organizations. *Journal of Cleaner Production*, 171, 1255–1274. https://doi.org/10.1016/j.jclepro.2017.10.011

Piwowar-Sulej, K. (2021). Core Functions of Sustainable Human Resource Management. *Sustainable Development*, 29(4), 671-693. https://doi.org/10.1002/sd.2166

Piwowar-Sulej, K., Malik, S., Shobande, O. A., Singh, S., & Dagar, V. (2023). A Contribution to Sustainable Human Resource Development in the Era of the COVID-19 Pandemic. *Journal of Business Ethics*, 1-19. https://doi.org/10.1007/s10551-023-05456-3

Prasad, R., Mishra, R., & Bapat, V. (2019). Corporate sustainability and environmental innovation. *Journal of Cleaner Production*, 228, 374–386. https://doi.org/10.1016/j.jclepro.2019.04.375

Rani, S., & Mishra, K. (2014). Green HRM: Practices and Strategic Implementation in the Organizations. *International Journal on Recent and Innovation Trends in Computing and Communication*, 2(11), 3633-3639.

Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. G. (2012). Business cases for sustainability: The role of business model innovation for corporate sustainability. *International Journal of Innovation and Sustainable Development*, 6(2), 95–119. https://doi.org/10.1504/IJISD.2012.046944

Sezen-Gültekin, G., & Argon, T. (2020). Örgütsel sürdürülebilirlikte yeni boyutlar: insan kaynakları ve ileriye bakış. *Eğitim ve İnsani Bilimler Dergisi*, 11(21), 505–520. https://doi.org/10.14687/jhs.2020.21

Singh, T., & Rao, R. (2016). Emergence of Green HRM in Modern Era. *Global Journal for Research Analysis.*

Stankevičiūtė, Ž., & Savanevičienė, A. (2018). Designing Sustainable HRM: The Core Characteristics of Emerging Field. *Sustainability*, 10(12), 4798. https://doi.org/10.3390/su10124798

Strenitzerová, M., & Achimský, K. (2019). Employee satisfaction and organizational sustainability. *Sustainability*, 11(3), 765. https://doi.org/10.3390/su11030765

Strenitzerová, M., & Achimský, K. (2019). Employee Satisfaction and Loyalty as a Part of Sustainable Human Resource Management in Postal Sector. *Sustainability*, 11(17), 4591. https://doi.org/10.3390/su11174591

Tariq, S., Jan, F. A., & Ahmad, M. S. (2016). Green Employee Empowerment: A Systematic Literature Review on State-of-Art in Green Human Research Management. *Quality and Quantity*, 50(1), 237-269.

Theodoridis, D. Y. (2017). Workforce Diversity as a Guiding Light towards SHRM: Exploring Managers' Views Regarding Workforce Diversity, its Impact on Recruitment and Selection Practices, and the Role of Sustainable HRM within Organizations. Master's Thesis, University of Stavanger, Norway.

Uzden, T., & Bozkurt, H. (2023). Örgütsel sürdürülebilirlik boyutları üzerine kavramsal bir inceleme. *Kırklareli Üniversitesi Sosyal Bilimler Dergisi*, 7(2), 180–192. https://doi.org/10.48121/kusbder.2023.18

Yazır, A. (2024). Çevik liderlik ve örgütsel sürdürülebilirliğin iş tatminine etkisi: Marmara bölgesi belediyelerinde bir araştırma. (Doktora tezi, İstanbul Gelişim Üniversitesi). YÖK Tez Merkezi.

Zahrani, A. A. (2022). Team Creativity and Green Human Resource Management Practices' Mediating Roles in Organizational Sustainability. *Sustainability*, 14(19), 12827. https://doi.org/10.3390/su141912827

Zaugg, R. J., Blum, A., & Thom, N. (2001). *Sustainability in Human Resource Management.* Institute for Organisation and Human Resource Management (IOP), Berne, Switzerland.

Zhu, Q., & Sarkis, J. (2004). Relationships Between Operational Practices and Performance Among Early Adopters of Green Supply Chain Management Practices in Chinese Manufacturing Enterprises. *Journal of Operations Management*, 22(3), 265-289.

Elkington, J. (1998). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business.* Oxford: Capstone.

Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable development: Mapping different approaches. *Sustainable Development*, 13(1), 38–52. https://doi.org/10.1002/sd.244

Meadows, D. H., Meadows, D. L., Randers, J., & Behrens, W. W. (1972). *The Limits to Growth.* New York: Universe Books.

WCED (World Commission on Environment and Development). (1987). *Our Common Future (Brundtland Report).* Oxford: Oxford University Press

CHAPTER III

REIMAGINING LEADERSHIP FOR SUSTAINABLE EDUCATIONAL MANAGEMENT: AN AI-ENHANCED CONCEPTUAL FRAMEWORK

Md Harun RASHID[1], Intan Marfarrina BINTI OMAR[2], Gao SUYU[3]

[1] University Malaya, Department of Educational Management, Planning and Policy, Faculty of Education, Email: harun.sh96@gmail.com; ORCID ID: 0000-0003-2205-6649

[2] University Malaya, Department of Educational Management, Planning and Policy, Faculty of Education, Email: imarfarrina@um.edu.my; ORCID ID: 0000-0001-7302-1054

[3]University Kebangsaan Malaysia, Faculty of Business Administration, Malaysia, Email: a185017@siswa.ukm.edu.my; ORCID ID: 0009-0008-8509-9690

Abstract

The pursuit of sustainability in education has placed leadership and advocacy on the battleground of global policy making, particularly regarding Sustainable Development Goals 4 (SDG4). Research on leadership ethics and collaboration has, until quite recently, emphasized the role of artificial intelligence (AI) in augmenting productivity. However, there remains a glaring lack of scholarly inquiry regarding AI as a transformative driver of sustainable leadership in education. This conceptual paper aims to address this gap by suggesting an AI-informed model for reconstructing leadership in the management of sustainability in education. Drawing from transformational, distributed, and authentic leadership, sustainability scholarship as well as the Technology–Organisation–Environment (TOE) model, the study develops a framework integrating four critical elements: leadership, AI-enabled policy advocacy, and sustainability values. The framework positions leadership as the catalytic agent, sustainability as the normative underpinning, AI as the augmenting resource, and policy as the regulatory fence that guarantees accountability and equity. It argues that AI, leadership, and policy can improve transparency, predictive decision making, and resilience if sustainability-centred leadership is present to ensure ethically sustainable results. These leadership policies also determine the degree to which sustainably- inequitable outcomes can be responsive to change. This paper strengthens the discussion of theory by incorporating leaderships focus into the digital world, describes AI as more than just an operational tool, and sets the groundwork for further research through falsifiable propositions. It helps educational institution heads and policymakers to synchronize the use of AI with the sustainability objectives by providing opportunities for just, sustainable and future-oriented educational systems.

Introduction

The pivotal role of Sustainability in Managing and Policy Educational Systems in the context of Global Education has educational management that is sustainable goes beyond sustaining the environment to include the sustaining of fair, resilient, and inclusive systems that respond to the diverse requirements of the learners and the communities (Jangde et al., 2025). Such defined outcomes call for even greater capacity of vision and leadership than has ever been practiced, for in addition to the standard dictates of management, ethics, equity, and the enduring welfare of society must be incorporated (Fullan, 2007). At the same time, the domain of Educational Leadership is being changed, and even possibly revolutionized, by the rapid growth of technology, and especially Artificial Intelligence (AI), in areas such as personalized learning, administrative productivity, predictive analytics, and policy surveillance (Luckin et al., 2024). The Conversations around and about the use of AI in Education has been skewed towards the improvement of functions and outcomes of teaching and has in fact sought to address gaps that strengthen leadership for transformative sustainability (Popenici & Kerr, 2017; Zawacki-Richter et al., 2019). Policy is part of the problem, bordering on the fragmented and complex, and incorporating AI, Leadership, and Education in Sustainability is always bolted on as an afterthought. Though the previous literature on sustainable educational leadership is fundamental and focuses on values and ethics, collaboration, and future

oriented thinking (Hargreaves & Fink, 2005; Saiti, 2021) has still insufficiently theorized how AI could act as a driver for those principles and put them into practice. This is the gap that this paper aims to address as it seeks to extend the leadership practices to redefine the roles to amalgamate AI for better decision making, accountability, and sustainability outcomes to propose a conceptual model aimed to guide practice and policy. This guides policy and practice to strengthen the discourse and adds to the literature that integrates sustainability with technology, thus bridging the fundamental gaps in research that address leadership, sustainability, and AI in educational management (Omar, 2022).

Theoretical Foundations

Leadership in Educational Management

Leadership has consistently been recognised as a pivotal factor influencing the trajectory, culture, and effectiveness of educational institutions. Conventional leadership models typically prioritise hierarchy and authority; however, modern educational approaches increasingly acknowledge the necessity for participatory, ethical, and visionary practices (Bush, 2020). This evolution signifies the increasing intricacy of educational systems and their obligation to address global imperatives, including inclusivity, technological disruption, and sustainability. Theories including transformational, distributed, and authentic leadership are especially pertinent.

Transformational leadership prioritises vision, inspiration, and ethical commitment, allowing leaders to galvanise stakeholders towards shared objectives that transcend short-term benefits (Leithwood & Jantzi, 2006). Distributed leadership prioritises collective responsibility, fostering a shared leadership among administrators, teachers, and stakeholders, as opposed to a centralised approach (Spillane, 2006). Authentic leadership incorporates an ethical dimension, highlighting transparency, inclusivity, and integrity in decision-making (Avolio & Gardner, 2005). Collectively, these theories establish the ethical and strategic basis for leadership that can integrate sustainability into educational management while navigating the risks and opportunities presented by emerging technologies like Artificial Intelligence (AI).

Sustainability and Educational Management

Sustainability has emerged as a crucial guiding principle in educational management, especially as global frameworks like the United Nations' Sustainable Development Goal 4 (SDG) and UNESCO's Education for Sustainable Development (ESD) emphasise inclusive, equitable, and resilient systems. Sustainable educational management encompasses not only environmental stewardship but also equity, social justice, and institutional resilience (Sterling, 2016). Leaders must incorporate ecological consciousness, equitable access, and adaptive strategies to equip institutions for crises like pandemics or digital disruptions. The

COVID-19 pandemic exemplified the necessity for leadership capable of reconciling immediate responses with long-term sustainability strategies (Fullan, 2007). Leadership practices that align with sustainability conceptualise education as a public asset benefiting both present and future generations, prioritising not only academic achievements but also comprehensive well-being. Nonetheless, in the absence of technological facilitators, even the most innovative sustainability strategies may encounter obstacles in execution. AI presents potential solutions through tools for efficient resource allocation, data-driven policy evaluation, and early detection of risks such as student disengagement. However, sustainability frameworks warn that technology should prioritise human-centred and ethical objectives over mere efficiency (Metcalf & Benn, 2013).

Artificial Intelligence and Educational Leadership

The swift emergence of AI in education has created new opportunities while presenting significant challenges.

Contemporary applications emphasise micro-level educational tools, including adaptive platforms, automated assessment systems, and personalised learning environments (Zawacki-Richter et al., 2019). This limited perspective neglects the broader implications of AI for institutional leadership and policy. At the leadership tier, AI can serve as a catalyst for enhanced and strategic decision-making. Predictive analytics can anticipate enrolment patterns, identify students at risk, and model a range

of policy scenarios (Paleczek et al, 2021). Automated dashboards can track, in real time, the achievement of institutional milestones and targets, including sustainability targets. AI-based sentiment analysis of feedback from teachers or students can assist leaders in monitoring and encourage more responsive and transparent practice which in turn improves trust. Nonetheless, these opportunities also carry risks. The lack of the bureaucratic oversight is designing a division of a digital mission. The algorithmic bias of AI, concerns about data privacy and digital surveillance, and the embodiment of democracy in an algorithm, algorithmic injustice, and the absence of surveillance are the most prominent and deeply rooted ethical concerns of the AI phenomenon (Selwyn, 2019).

Integrative Perspectives for Conceptual Synthesis

Integrative theoretical perspectives are important for bridging leadership, sustainability, and the use of AI. The Technology–Organization–Environment (TOE) framework explains the adoption of an innovation as a function of the availability of the relevant technology, the level of organisational readiness, and a set of soft and hard environmental elements (Karsa et al., 2025). In the case of education, TOE points out that AI is not a stand-alone technology and, therefore, its effective integration involves leadership, culture, and policy of the institution as systems. The TOE framework is supplemented by the transformational leadership theory which provides the driving and aspirational

framework that is required for deepening the sustainability ethos. Stakeholders who are inspired and energized by a sustainability vision can use AI to actualize that vision as derived from the predictive data (Leithwood & Sun, 2012). The ethics of sustainability leadership that is systemic proceeds from the idea of ethical border lessness and intergenerational stewardship which ensures that innovation and technology serve humanity and the earth first. All these perspectives provide a strong basis for rethinking educational administrative leadership. Theories of leadership integrate ethics and vision, while sustainability approaches integrate the systems of social and ecological resiliency, and the AI discourse integrates the strong and weak.

The synthesis draws the conclusion that leadership is more than administration, it is the capacity to transform and harness the potentials of AI for the sustainable management of education offered. The synthesis sets out the foundation for a framework that intersects leadership practices, AI capabilities, aligned policies, and the sustainability outcomes, and aims to steer the future of educational management.

Conceptual Framework Development

Identifying Core Constructs

Constructing a framework for redefining leadership in sustainable educational management involves defining primary constructs. These include leadership, sustainability, artificial intelligence (AI), and policy alignment. Leadership involves the

capacity of a person together with an organization to steer an institution within the framework of common goals. Sustainability comprises the equity, resilience, and environmental stewardship which endure and underpin initiatives globally, including the United Nations Sustainable Development Goals, especially SDG4 on inclusive and equitable quality education. AI encapsulates technologies that enhance institutional decision-making, accountability, and predictive analytics. Policy alignment refers to the interface of internal and external boundaries that shape the integration of sustainability and AI value systems in education. Altogether, these constructs suggest that leadership is the primary value, AI is the accelerator, sustainability is the guiding value, and policy alignment ensures both institutional and systemic unity (Paleczek et al., 2025).

Mapping Interrelationships

It is crucial to elaborate the relationships of the core constructs each interrelated too other. Leaders crucially articulate the vision and strategy of the institution. Sustainability principles in leadership involve the ethical and inclusive, health-oriented practice well beyond rational efficiency of the immediate term. The inclusion of AI in leadership amplifies the proficiency in decision-making and resource distribution, result-oriented policy formulating and predictive intelligence. Leaders can employ AI-driven predictive analytics to forecast enrolment variations, pinpoint at-risk student demographics, and enhance learning

resources, thereby converting sustainability principles into practical strategies (Dimmock et al., 2004). Policy alignment serves a moderating function in this process. In the absence of policies that govern data utilisation, promote inclusivity, and require sustainability reporting, the application of AI may become disjointed or ethically dubious.

Consequently, policies establish the institutional framework in which leadership and AI can intersect to produce sustainable results. In this framework, leadership imparts vision, AI augments capability, sustainability furnishes an ethical foundation, and policy guarantees accountability (Hacker, 2024).

Framework Illustration and Propositions

The conceptual framework can be depicted as an interconnected system. Leadership is central, surrounded by sustainability values that provide ethical guidance. AI capabilities that augment and expand leadership functions are encompassed within this framework. Central to both is policy alignment, which regulates and validates the incorporation of AI into sustainability-focused leadership. The results of this system are sustainable educational management practices defined by inclusivity, resilience, and accountability. The framework generates multiple propositions for forthcoming empirical research. Initially, AI-driven leadership enhances accountability and transparency in educational administration. Leaders who incorporate AI

dashboards and predictive systems are more adept at tracking progress towards sustainability objectives and conveying results efficiently (Khairullah et al., 2021). Secondly, leadership that amalgamates sustainability principles with AI technologies fortifies institutional resilience. Such leaders can foresee disruptions, model crisis responses, and allocate resources effectively, ensuring continuity in challenging circumstances (Fullan, 2007). Third, policy alignment influences the relationship between AI-driven leadership and sustainable outcomes. Without supportive policies, the adoption of AI could become fragmented, inequitable, or unethical (Lainjo, 2020).

Implications of the Conceptual Framework

Innovative conceptions have implications for traditions, practices, and policies. For instance, this advances the studies of educational leadership by providing for the first time a normative basis on leadership and sustainability and artificial intelligence as the technical pour. This converging synthesis goes beyond the bounds of leadership scholarship that focuses on the proprietary domain of the individual centered on values and vision (Leithwood & Sun, 2012) and resourceful leadership leverage tools. The framework assists administrative leaders by telling them that sustainable management requires not only vision but also proffered technology in tools. It requires them to understand that AI goes beyond administrative capabilities to instrumental support for creating sustainable futures. The framework also

suggests the need for powerful regulations and governance structures to support the responsible use of AI in education. To achieve this, governments and institutions must develop policies that are equity-driven, data privacy oriented, and sustainability governance mandated. The framework clarifies the intersection of leadership, sustainability, AI, and policy providing for the first time a multidimensional perspective on how educational systems can tackle the 21st-century challenges. The future of educational leadership does not lie in being purely anthropocentric or mechanistic but center around the ethical regulatory and technologically capacitive vision accompanied by policy framework (Enăchescu, 2025).

Policy and Practice Review

The domain of policy formulation has enormous bearing on the intersection of sustainability, educational `leadership and the use of artificial intelligence (AI). In any organization, the leadership delineates the vision, the AI augments the institutional capacities, and the policy options articulate the enabling framework regarding the adoption of such innovations. International agencies such as UNESCO and the World Bank have been active in pushing sustainable development and the use of technology in education (Tanveer et al., 2020). The same time, national governments are pursuing a range of policies on AI and sustainability, shaped by domestic agendas, resource availability, and the political context. Analysing these global and national

approaches helps us to identify the gaps and barriers regarding the implementation of the proposed AI-augmented sustainable leadership framework in education. UNESCO has probably been the key player in the global policy context in promoting the integration of sustainability into education. The Education for Sustainable Development (ESD) framework articulates the vision of enabling learners to acquire knowledge, values, and skills for sustainable futures and advocates a profound transformation of leadership and governance for the SDGs. In this vision, educational leadership is expected to go beyond the functionalist and managerialist archetypes to embrace ethical stewardship, equity and sustainability. The significance of digital transformation, particularly of Artificial Intelligence, includes fostering inclusivity and sustainability in education. This idea appears in the UNESCO report, Reimagining Our Futures Together (Li et al, 2025).

The report, however, specifies that the inability to govern inequalities arising from digital divides or poorly managed digital inequalities will only deepen existing global inequalities. This highlights the importance of responsible leadership in AI and sustainability. The OECD has constructed a separate agenda that focuses on the intersection of education policy and AI, which has been defined as policy predicting tools. The intersection of AI and education policy has received increasing attention.

Recent literature indicates that designed for educational and administrative purposes, AI has the potential to improve institutional as well as system-level decision making, for predictive system of resource allocation, student participation, and institutional performance (Gonugunta, 2024). The indicates importance of policy coherence in the intersection of overpromised innovative ideas and underperformed accountability, which leads to the somewhat contradictory recommendation on the leadership framework for the policymaking as AI and sustainability. This has been re-emphasised by the World Bank which suggests that lack of digital transformation from pedagogical to administrative approaches will hinder the progress to sustainable education.

The EdTech Strategy 2025 clearly states that the implementation of technology must meet the principles of evidence-based use, equity, and scalability. The bank warns of the “digital divides” danger in which uncontrolled technology adoption deepens inequitable access to quality education. In low- and middle-income countries, the endorsement of government policy that invests in teacher training, infrastructure, and ethical AI governance is necessary to ensure sustainable and beneficial outcomes of AI. The World Bank insists that both institutional and national leaders must align with policy frameworks to ensure the responsible and equitable use of AI (Aderibigbe et al., 2023). Different national contexts demonstrate the diversity of

approaches to AI and education sustainability. The government of Malaysia, for instance, has explicitly linked education reform with sustainability and digital transformation.

Malaysian Education Blueprint has already established equity, access, inclusion, and resilience as its key pillars, and more recent initiatives have extended the use of AI and other digital learning technologies in the education system. Policies such as the National AI Roadmap (2021-2025) show the importance of AI in the country's socio-economic development, especially in education, which reflects strong commitment in policepersons; to marrying technology and sustainability. These policies furnish a positive backdrop for educational administrators to apply AI to eco-sustainable management, even as challenges related to resource appropriation, teacher training, and ethical leadership still linger. In the case of Bangladesh, educational policy reforms have mainly focused on improving access to education and reducing inequities among different educational systems, such as general schools and madrasahs. While the attention given to sustainability through the SDGs has AI- educational management integration in democracy managing education systems, the level of development which can be seen of progress of function is still very low.

As reiterated by Hossain (2022), many limitations have always pertained to artificial intelligence policy frameworks in the Bangladeshi education system, detailing its shortcomings in

governance and resource allocation. Embracing the Vision strategy and its successors, Bangladesh has pioneered the intersection of education and digital transformation, AI enabled education remains scarce. The structural silos that separate educational governance and digital governance AI enabled education particularly, remains unaddressed (Tarafdar et al, 2025). The comparison of Bangladesh and Malaysia provides yet another portal to reflect on the gap in digital education governance. While global systems provide al frameworks, the actual policies and practices on the ground remain uniquely national and regionally constructed, as in the case of educational leadership and integrating AI, or sustainability specifically in Bangladesh.

Malaysia, alongside other countries with intricate infrastructure and multifaceted policy structures, will likely be more successful with implementing AI augmented leadership in sustainability (Wah, 2025). In contrast, countries such as Bangladesh highlight the need for policies and infrastructure improvements to avoid the AI problem, `which exacerbates inequitable systems. The policy and practice documents clearly demonstrate the direct relationship between leadership in sustainable educational management and the governance system. International bodies underline the need to balance technology and sustainability with national governments establishing the groundwork, establishing systems of training, and other regulations critical to sustainable

educational management. The framework presented in this paper is a conceptual one spanning the global-national continuum: AI enhances leadership, sustainability provides the ethical compass, and policies ensure just and responsible adoption. Without comprehensive policies at both levels, leadership is likely to be both illegitimatised and incapable of translating vision into sustainable outcomes. On the other hand, the more precise the policies, the more policy structures will allow leaders to tap into the disruptive nature of AI for sustainable educational management.

Implications and Contributions

The newly proposed conceptual framework integrating leadership, sustainability, artificial intelligence (AI), and policy alignment advocates several theoretical, practical, and policy implications. Responding to the call in the scholarly conversation, this work redefines educational leadership in the contexts of sustainability and digital transformation. It offers institutional leaders' ways to deploy AI that strengthen resilience, inclusivity, and accountability.

This policy guide underlines the necessity of governance frameworks that ethically regulate and control AI to ensure that it produces sustainable results and impacts. The framework to be discussed in the guide expands the scope of educational leadership studies by integrating underexplored aspects of

contemporary theories. Most leadership theories, such as transformational, distributed, and authentic leadership, focus on visioning, partnership, and ethics (Leithwood & Jantzi, 2006; Spillane, 2006; Avolio & Gardner, 2005). These theories have yet to systematically incorporate technological facilitators into their conception of leadership capability. The model puts forth AI as an accelerant to leadership capacity untapped on the value of implementing sustainability principles, thus enriching extant theories to the digital age. This aligns with a growing stream in management and educational research capturing the pervasive impact of digital technologies in changing leadership activities (Selwyn, 2019).

The model synthesizes the literature on sustainability leadership, underscoring the importance of vision, equity, and stewardship of the future (Metcalf & Benn, 2013). The unique value added is the cross-section of leadership, sustainability, and AI as an integrated conceptual framework to guide future research and practice. The model offers perspective to institutional leaders grappling with the dual challenges of sustainability and digital transformation. Conceptualising leadership as the primary force, integrated with sustainability values, and augmented by AI highlights the necessity of providing leaders with ethical orientations and technological skills. Leaders are progressively obligated to make data-informed decisions, navigate crises, and guarantee equitable access to education (Fullan, 2007). Artificial intelligence can

enhance these functions through predictive analytics, performance monitoring, and the promotion of transparent reporting. The framework underscores that AI should not be implemented solely for efficiency but must align with sustainability objectives.

Predictive analytics can identify students at risk of dropping out; however, leaders must ensure that interventions are equitable and attuned to broader socio-cultural contexts. This component emphasizes the framework's functional impact providing a lens through which the role of technology use rather than an end point, serves the ethical and sustainable management of education. The policy aspects are equally significant framework shows that the combination of leadership and AI integration will not succeed in the absence of supporting policy frameworks. Policies at the national and institutional levels carry a constraining effect on the governance of the policy domains on the distribution and management of ethical resources to the governance regimes of the policy domains. In lack of governance policies, the use of AI is likely to be fragmented and ineffective, worsening inequality and worsening the erosion of trust in the education system. The framework helps shape the policy discourse by identifying the conditions when AI can be used to advance sustainable leadership (Rosário et al., 2025). Malaysia, the National AI Roadmap alongside the Malaysia Education Blueprint provides the policy architecture for the use of AI in education, with an emphasis on equity and social

inclusion. In contrast, the situation in Bangladesh illustrates the lack of good policy frameworks by the absence of ethical policies which can lead to unjust and ineffective application of AI. The framework shows the importance of policies in placing leadership at the centre of the governance structures for the promotion of sustainable development.

In addition to these contributions within a field, the framework has much wider ramifications for the future of educational research and practice. For instance, the framework makes several testable propositions: How does AI-enabled leadership enhance accountability? How does the alignment of policies moderate the impact of AI on the sustainability of educational institutions? Such propositions can be the hypotheses of quantitative studies, utilizing survey research instruments, or qualitative research involving case studies across a range of educational settings. This positions the framework as a new target for academic inquiry, which will allow scholars to affirm, refine, or dispute the propositions. There is also the shift the framework proposes to make on the development programs for leadership for practice. The authors argue that educational leaders' training is now required to sustain literacy and artificial intelligence mastery (Asrifan et al., 2025).

This also means that there is a need to rethink the curricula for professional development to also include the digital ethical

governance of AI use in strategic decision-making, as well as institutional alignment to sustainability practices. The framework proposes the formation of interdisciplinary leadership teams within institutions that incorporate education, sustainability, and data science. These practices can implement the framework making it pragmatic instead of theoretical. Its contribution is characterised by the timeliness and relevance of the framework. Education systems are facing global crises climate change and digital disruption making interdisciplinary approaches to leadership, sustainability, and AI integration particularly urgent. The framework provides a vision to understand and respond to these challenges. It argues that by placing leadership as the core, sustainability as the framing element, AI as the augmenting resource, and policy as the controlling instrument, a comprehensive model for rethinking the management of education systems in the twenty first century is delivered (Almusaed et al., 2024).

Limitations and Future Directions

Although framed as a conceptualisation, the proposed framework puts forth a novel perspective on the integration of AI into leadership for the sustainability of managing educational systems. Its importance stems from the uniqueness of the perspective rather than its fields of application. Every theory benefit from specific models that assist in grasping its unique nature, but these models can never serve as endpoints for further

testing. They demand empirical application in multiple environments. Future studies should explore the relationships in the current framework, for example, the extent to which AI-equipped leaders enhance accountability in their organisations, and the role of alignment in policy-driven effectiveness of sustainability Dissanayake et al., 2025; Rashid et al., 2022).

The framework lacks a contextualisation of the educational systems which is a critical aspect. The alignment of leadership AI and policy implementation practices is a stark contrast in the Global North and South. A case in point is Malaysia's aggressive AI and sustainability strategy versus Bangladesh's rudimentary application of AI in education. Absence of context specific resources such as infrastructure, prevailing attitudes, and appropriate policy stances indicate that such a framework is of little value unless customized. Contextual validation is validation for this framework Rashid et al., 2022). The framework remains insufficient considering que preventive meassures proposed focusing technology alignment and sustaining value protective approach, new ones like algorithmic bias, data privacy violations, and digital surveillance require deeper investigation. Empirical work needs to examine how leaders over these dilemmas and understand which ethical principle is most appropriate to ensure responsible AI in education. The framework does not cover these issues with particular attention to educators and leaders' capacity building (Cuéllar et al., 2025).

The successful use of AI for sustainability is dependent on the vision of leadership, enabling strategies, and the knowledge of the users interacting with these systems. Without adequate professional learning there is a risk of "symbolic adoption", which is theorising the use of AI adoption devoid of practical application (Selwyn, 2019; Rashid et al., 2025). Future investigations should consider the effectiveness of leadership programs that integrate artificial intelligence with sustainable literacy skills. This is the first study to examine the relationships between leadership, AI, and sustainability, but it is limited using secondary literature.

Although the synthesis is anchored with credible works, the absence of primary data renders the framework purely theoretical. Subsequent efforts should involve mixed-methods research that combines large-scale quantitative data with qualitative case studies of organizations that use AI for sustainable operations. This research will not only provide the much-needed evidence but also establish the practical framework for the theoretical model (Rashid et al, 2021; Rahman et al, 2025).

Conclusion

This study broadens the scope of educational management by proposing an AI enriched leadership framework. It argues that educational leaders need to manage positional power at the same

time practice vision, ethics and inclusivity. It emphasizes that leaders need to encourage institutions to move beyond efficient operational short-term goals, and instead, move toward long term socially responsible and resilient goals. It explains that Positional power needs to also practice ethical and inclusive AI as the technology to augment leadership. This paper also argues that keeping inclusivity as the centre can offer a promising avenue for the advancement AI-led educational management. It argues that the ethical application of AI needs to be framed beyond equality to equity and focused on creating a balance of power equity. Educational leaders need to resist the trend for AI to dominate educational systems, and, instead, balance positional AI with human soft systems. Through offering e-Leadership, AI can strengthen a leader's capacity to tell a compelling vision, amplify ethical AI with human systems, and embed inclusivity at the foundation. Each of these elements strengthen ethical leadership, and inclusive AI technology.

AI also provides new ways of enhancing the leadership advantage of leaders in predictive analytics, decision-making, and accountability. As a result, AI can and does allow leaders to move from a position of reactivity to one of strategy, alleviating the need for disruption in the systems. The framework's outer boundary, policy alignment, also ensures that leadership and policy are tech governance systems. Whether AI to policy boundaries operationalisation sustains the negative espoused

outcome hinges results to inequity, absence of ethics, and resource policy. The absence of equity supportive policies results in resource allocation inequities and other structural barriers, even the most creative leaders may struggle. On the other hand, policies enable leaders to use their imagination and creative vision to action transformation for equity AI.

The framework captures the responsive relationship between the international and local spheres. Sustainability with the transformation of technology are universal priorities, but their implementation is shaped by the context of the country. The leaders are responsible for the delicate task of universalising these principles in particular systems and cultural contexts. This involves a high level of flexibility, willingness to understand other cultures, and ready appreciation that their system on AI and sustainability will differ from others. The principal addition that this framework makes conceptually is the integration of Leadership, Sustainability, Artificial Intelligence, and Policy within a single framework. It is the integration of these areas that offers a visionary approach to understanding and managing the transformation of education. It also provides a basis for future scholarly work that can test the framework's propositions, refine its assumptions, and study its contextualized implementation. Those leaders who are ethical, visionary and adept at technology are the ones who will shape the future of managing education sustainably. It requires an educational institution that does not

view AI technology only as a tool for efficiency, but as a partner in achieving enduring resilience and inclusiveness. It requires policies that create the conditions for equity and accountability. By embracing leadership, policy, and artificial intelligence in sustainable education management, educational systems will be able to move toward an innovative, equitable, resilient, and sustainable future for coming generations.

References

Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: Bridging the gap between potential and implementation. *Computer Science & IT Research Journal*, *4*(3), 185-199.

Almusaed, A., Almssad, A., Yitmen, I., Wallhagen, M., Yang, Y. F., & Iyer-Raniga, U. (2024). *Integrative Approaches in Urban Sustainability: Architectural Design, Technological Innovations and Social Dynamics in Global Contexts*. BoD–Books on Demand.

Asrifan, A., Khristianto, K., Aini, N., & Wahira, W. (2025). Integrating AI and Sustainability In Education: A New Paradigm for Modern Literacy. In *Rethinking Literacy in the Era of Sustainability and Artificial Intelligence* (pp. 43-72). IGI Global Scientific Publishing.

Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *The leadership quarterly*, *16*(3), 315-338.

Bush, T. (2020). Theories of educational leadership and management.

Cuéllar, C., Horn, A., González, Á., & Queupil, J. P. (2025). Winds of change? Understandings about capacity-building among actors in the public education system in Chile. *Professional Development in Education*, *51*(1), 119-134.

Dimmock, C., & Walker, A. (2004). A new approach to strategic leadership: learning-centredness, connectivity and cultural context in school design. *School leadership & management*, *24*(1), 39-56.

Dissanayake, L., & Al-Sharify, A. (2025). AI and Decision Making: How does the integration of AI influence leadership decision making within technology driven companies?.

Enăchescu, V. A. (2025). Rethinking Educational Management: Preparing Leaders for Global Sustainability and Ethical Challenges in a Digital Era. *Review of International Comparative Management/Revista de Management Comparat International*, *26*(2).

Fullan, M. (2007). *Leading in a culture of change*. John Wiley & Sons.

Gonugunta, K. C., & Leo, K. (2024). Role of Data-Driven Decision Making in Enhancing Higher Education Performance: A Comprehensive Analysis of Analytics in Institutional Management. *International Journal of Acta Informatica*, *3*(1), 149-159.

Hacker, P. (2024). Sustainable AI regulation. *Common Market Law Review*, *61*(2).

Hargreaves, A., & Fink, D. (2005). Sustainable leadership. *The essentials of school leadership*, 173-189.

Hossain, M. (2022). Digital Bangladesh vision and the current state of digitalization. In *Digital transformation and economic development in Bangladesh: Rethinking digitalization strategies for leapfrogging* (pp. 29-56). Singapore: Springer Nature Singapore.

Jangde, S., & Ahmad, M. A. (2025). Integrating Sustainability into Equal Education Opportunities. In *Environmental Landscape and Sustainable Biodiversity for Healthy Green Growth* (pp. 97-103). Cham: Springer Nature Switzerland.

Karsa, A. H. A. N. (2025). Silicon Valley to Main Street: A Case Study Analysis of Tech Innovation Transfer to Conventional Business Operations. *Journal of Innovation and Operational System*, *2*(1), 49-53.

Khairullah, S. A., Harris, S., Hadi, H. J., Sandhu, R. A., Ahmad, N., & Alshara, M. A. (2025, February). Implementing artificial intelligence in academic and administrative processes through responsible strategic leadership in the higher education institutions. In *Frontiers in Education* (Vol. 10, p. 1548104). Frontiers Media SA.

Lainjo, B. (2020). The global social dynamics and inequalities of artificial intelligence. *Int. J. Innov. Sci. Res. Rev*, *5*, 4966-4974.

Leithwood, K., & Jantzi, D. (2006). Transformational school leadership for large-scale reform: Effects on students, teachers, and their classroom practices. *School effectiveness and school improvement*, *17*(2), 201-227.

Leithwood, K., & Sun, J. (2012). The nature and effects of transformational school leadership: A meta-analytic review of unpublished research. *Educational administration quarterly*, *48*(3), 387-423.

Li, Y., Tolosa, L., Rivas-Echeverria, F., & Marquez, R. (2025). Integrating AI in education: Navigating UNESCO global guidelines, emerging trends, and its intersection with sustainable development goals.

Luckin, R., Rudolph, J., Grünert, M., & Tan, S. (2024). Exploring the future of learning and the relationship between human intelligence and AI. An interview with Professor Rose Luckin. *Journal of Applied Learning and Teaching*, *7*(1), 346-363.

Metcalf, L., & Benn, S. (2013). Leadership for sustainability: An evolution of leadership ability. *Journal of business ethics*, *112*(3), 369-384.

Metcalf, L., & Benn, S. (2013). Leadership for sustainability: An evolution of leadership ability. *Journal of business ethics*, *112*(3), 369-384.

Omar, I. M. (2022). Transformational leadership and safety management in Malaysia vocational colleges. *Journal of Technical Education and Training*, *14*(1), 192-201.

Paleczek, L., Seifert, S., & Schöfl, M. (2021). Comparing digital to print assessment of receptive vocabulary with GraWo-KiGa in Austrian kindergarten. *British Journal of Educational Technology*, *52*(6), 2145-2161.

Paleczek, L., Seifert, S., & Schöfl, M. (2021). Comparing digital to print assessment of receptive vocabulary with GraWo-KiGa in Austrian kindergarten. *British Journal of Educational Technology*, *52*(6), 2145-2161.

Popenici, S. A., & Kerr, S. (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and practice in technology enhanced learning*, *12*(1), 22.

Rahman, H. M., Islam, J., Khan, N., Shamem, A. S. M., & Rashid, M. H. (2025). Islamic Feminism in Response to the Western Misogyny, and Women Rights in the Islamic context. *Dirasat: Human and Social Sciences*, *52*(5), 10056-10056.

Rashid, M. H., & Hui, W. (2021). Teaching English as a Second Language to develop communicative competence of ESL Learners. *The International Journal of Applied Language Studies and Culture*, *4*(2), 1-7.

Rashid, M. H., & Hui, W. Exploring the Role of Women Entrepreneurs in Advancing Education and Development in Bangladesh. In *Women-Led Innovation and Entrepreneurship* (pp. 246-257). CRC Press.

Rashid, M. H., Lan, Y., & Hui, W. (2022). The importance of vocabulary in teaching and learning in applied linguistics. *Linguistics and Culture Review*, *6*(on), 541-550.

Rashid, M. H., Ye, T., Hui, W., Li, W., & Shunting, W. (2022). Analyse and challenges of teaching writing among the English teachers. *Linguistics and Culture Review*, *6*(on), 199-209.

Rosário, A. T., & Boechat, A. C. (2025). How Sustainable Leadership Can Leverage Sustainable Development. *Sustainability*, *17*(8), 3499.

Saiti, A. (2021). Is strategic and sustainable leadership synonymous with effective leadership?. *Journal of Leadership, Accountability & Ethics*, *18*(1).

Selwyn, N. (2019). *Should robots replace teachers?: AI and the future of education*. John Wiley & Sons.

Spillane, J. P. (2006). Distributed leadership. Jossey-Bass/Wiley.

Sterling, S. (2016). A commentary on education and sustainable development goals. *Journal of Education for Sustainable Development*, *10*(2), 208-213.

Tanveer, M., Hassan, S., & Bhaumik, A. (2020). Academic policy regarding sustainability and artificial intelligence (AI). *Sustainability*, *12*(22), 9435.

Tarafdar, S., Afroz, S., & Ashrafuzzaman, M. (2025). Artificial intelligence and the future of education in Bangladesh: Impact, challenges, and ethical implications of AI on student learning. In *AI Adoption and diffusion in education* (pp. 287-320). IGI Global Scientific Publishing.

Wah, J. N. K. (2025). The Role of AI in Transforming Agriculture: Toward Sustainable Growth in an Era of Climate Change. *Scientific Culture*, *1*(2), 45-63.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education–where are the educators?. *International journal of educational technology in higher education*, *16*(1), 1-27.

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education–where are the educators?. *International journal of educational technology in higher education*, *16*(1), 1-27.

CHAPTER IV

THE POLITICS OF PROTEST ANDORGANIZATIONAL RESILIENCE:

DIGITAL CITIZENSHIP AND DISINFORMATION IN INDONESIA'S DEMOCRACY

Rizki Amalia YANUARTHA[1]

Putri HERGIANASARI[2]

[1] Universitas Kristen Satya Wacana, rizk.amalia@uksw.edu, ORCID ID: 0009-0006-1495-2194
[2] Universitas Kristen Satya Wacana, putri.hergianasari@uksw.edu, ORCID ID: 0000-0002-4607-3278

Abstract

Protest movements have become a recurring feature of Indonesia's democratic trajectory, with their dynamics increasingly mediated by digital infrastructures and the circulation of contested information. This chapter investigates how disinformation and platform-based communication have influenced mobilization, framing strategies, and state responses in major episodes of protest, including the 2020 Omnibus Law demonstrations, the student protests of 2022–2024, and debates over electoral reforms. Relying on documentary sources, media archives, selected social media content, and elite interviews, the study engages with theoretical debates on deliberative democracy, contentious politics, and epistemic power to situate these events within a broader understanding of organizational behaviour in the post-truth era. The analysis demonstrates that disinformation operates not only as a technical problem but also as a political instrument that reshapes opportunity structures and complicates collective action. At the same time, the chapter conceptualizes digital citizenship comprising verification skills, ethical engagement, and civic participation as a form of organizational capacity that determines whether educational technology and digital platforms strengthen democratic resilience or reproduce epistemic inequalities. Through thematic and discourse analysis, supported by process-tracing, the chapter shows that while digital citizenship can mitigate the disruptive effects of disinformation, its uneven development across organizations and institutions reveals structural vulnerabilities. By interpreting digital citizenship as a dimension of organizational resilience, the chapter contributes to the wider discussion of sustainable organizational behaviour. It argues that strengthening the ability of civic organizations, educational institutions, and state actors to critically engage with information is essential not only for sustaining protest politics but also for consolidating democracy in Indonesia and beyond.

Introduction

Since the fall of the New Order regime in 1998, Indonesia has embarked on a democratization trajectory marked by political liberalization, freedom of expression, and expanded public participation (Abdulbaki, 2008). For more than two decades, Indonesian democracy has been marked by increasing intensity of social and political protest, which serves both as a channel for popular aspirations and as an instrument of accountability to the state (Aspinall, 2013). Data from the National Commission on Human Rights (KOMNAS HAM) shows a sharp increase in the number of protests between 2019 and 2021, culminating in demonstrations against the Omnibus Law on Job Creation in 2020, which mobilized tens of thousands of people in major cities. This illustrates the centrality of contentious politics as a persistent element of Indonesian democratic life. However, the post-Reformasi democratic landscape has been ambiguous. As Boy Anugerah and Jacob Endiartia (2018) argue, Indonesian democracy remains largely trapped in a procedural-electoral phase, where the proliferation of freedoms often takes the form of "natural freedoms" unstructured mass freedoms that reinforce oligarchic dominance rather than "civil liberties" that maintain substantive equality among citizens (Anugerah et al., 2018). For example, while direct local elections (PILKADA) were introduced to expand participation, oligarchic elites quickly adapted by financing candidates, capturing political parties, and mobilizing vote-buying networks. Instead of broadening civic empowerment, these practices have allowed powerful actors to consolidate control under the guise of popular participation. The rise of mass democracy creates opportunities for mobilization, but also generates new vulnerabilities, particularly as grassroots aspirations remain underrepresented and deliberative spaces continue to be dominated by elites. This gap explains the recurring waves of public dissatisfaction with democratization, expressed through resistance, protests, and grassroots mobilizations (Vrieze, 2024).

A major transformation lies in the emergence of digital infrastructure as a new arena for contentious politics. According

to We Are Social 2023, approximately 77% of Indonesia's population are active internet users, with approximately 60% relying on social media as their primary source of political news. Social media platforms have facilitated rapid mobilization, the aggregation of public opinion, and the circulation of alternative frames (Kemp, 2023). However, as the National Resilience Institute (LEMHANNAS) study highlights, the digital realm does not necessarily enhance deliberation; instead, it has increasingly become an arena rife with hate speech, shallow clicktivism, and disinformation hallmarks of what has been described as a post-truth state (Sonni, 2025).

Disinformation plays a crucial role in this transformation. Before turning to specific cases, it is important to highlight that the post-Reformasi era has been shaped by both the promise and the perils of digital infrastructure. The 2020 Omnibus Law protests serve as a pivotal illustration of this paradox in Indonesia's digital democracy. On the one hand, digital platforms enabled students, labour unions, and civil society groups to rapidly mobilize supporters and circulate counter-frames; on the other hand, online narratives portraying demonstrators as "anarchists" or rioters legitimized harsh state repression (Ulum, 2020). Similarly, research by the Indonesian Anti-Hoax Society (MAFINDO) revealed that political hoaxes have consistently ranked as the most prevalent category of disinformation since 2019. These dynamic underscores how epistemic power, the capacity to shape public truth through the production and circulation of information has become a primary terrain of contestation between the state, political actors, and civil society. Against this backdrop, this chapter poses two primary research questions. First, how does disinformation influence the mobilization, framing strategies, and state responses to protests in Indonesia? Second, how can the notion of digital citizenship be understood as an organizational capacity that underpins democratic resilience amidst the rise of disinformation and digital delegitimization? (Pimay & Riyadi, 2019)

Academically, this study contributes to three strands of theoretical debate. First, it enriches the literature on contentious politics by explaining how protest practices are mediated by digital infrastructure. Second, it expands the framework of deliberative democracy by examining the epistemic challenges of polarization and post-truth politics. Third, it strengthens the relevance of epistemic power in explaining how control over the circulation of information shapes the resilience of civil society and the quality of democracy in Indonesia. By combining theoretical reflections with empirical insights, this chapter seeks to bridge the gap between classic studies of post-Reformasi democracy and the contemporary transformations embedded in Indonesia's digital ecology.

THEORETICAL FRAMEWORK

Contentious Politics & Protest Studies

The study of contentious politics has long held a central place in political sociology, social movement studies, and comparative politics. Pioneered by the seminal work of Charles Tilly, Sidney Tarrow, and Doug McAdam, the contentious politics framework shifted academic attention from exceptionalist explanations of protest to systematic explanations of recurring patterns of collective action. Contentious politics is broadly defined as episodic, public collective interactions between claimants and their targets, in which the government often acts as claimant, target, or third party (Tarrow, 2008). Unlike conventional forms of participation such as voting or lobbying, contentious politics is inherently disruptive, emerging from the interactions of ordinary citizens, organized groups, and state institutions. A key analytical concept in contentious politics is the notion of political opportunity structures. This concept refers to the consistent, but not necessarily permanent dimensions of the political environment that provide incentives for people to engage in collective action and shape the strategies they adopt. Tarrow (2008) emphasized that waves of protest often coincide with moments of political openness, elite divisions, or state vulnerability. Conversely, periods of repression or elite cohesion

tend to limit mobilization (Tarrow, 2008). The rise of the Civil Rights Movement in the United States, for example, cannot be explained solely by grievances. It also reflected political opportunities generated by court rulings, federal intervention, and international pressure during the Cold War. Similarly, the 2011 Arab Spring uprisings occurred in a context where authoritarian fractures, triggered by economic crisis, regime corruption, and regional diffusion, opened up space for contestation (Yom, 2015). At the same time, opportunity structures are always accompanied by constraints or threats. Governments can use coercive measures, legal repression, or delegitimizing narratives to quell protests. Research on Indonesian civil society mobilization against the Electronic Information and Transactions Law (UU ITE) illustrates this dialectic. On the one hand, digital platforms enable activists to frame legal violations and mobilize broad coalitions. On the other hand, state repression and criminalization narrow opportunities, creating new risks for protesters (Ressmy et al., 2023). This interplay between opportunities and constraints is crucial for understanding why some movements manage to sustain opposition while others fade away.

Beyond opportunity, social movements rely on framing strategies to construct shared meaning and mobilize followers. Framing operates by identifying grievances, attributing responsibility, and proposing solutions in ways that resonate with potential supporters (Benford & Snow, 2000). Successful framing connects individual experiences to broader political demands, transforming personal problems into public issues. For example, the slogan "We are the 99%" during the Occupy Wall Street protests powerfully articulated structural inequalities while fostering a collective identity that transcends diverse grievances (Gerbaudo, 2012). Framing also shapes interactions with opponents. States often counter frame protests to delegitimize them, labelling demonstrators as criminals, radicals, or anarchists. During the 2020 Omnibus Law protests in Indonesia, authorities deployed narratives depicting protesters as "anarchists," thus justifying harsh police action (Rosyada &

Aisyah, 2022). Similar dynamics have occurred globally, in the United States, Black Lives Matter activists have been framed alternately as advocates for racial justice or as instigators of chaos, depending on the interests of political actors. The contestation of frames underscores the role of epistemic struggles in contentious politics, where competing truth claims influence public opinion and policy responses (McCoy, 2020).

Framing is inseparable from the construction of collective identity. Movements not only bring together individuals. They also foster solidarity and symbolic boundaries. As McAdam, Tarrow, and Tilly (2008) note, identity helps sustain mobilization in times of uncertainty or repression. Digital spaces have intensified this process by enabling activists to share symbols, hashtags, and narratives across vast networks (Tarrow, 2008). The #MeToo and #BlackLivesMatter movements exemplify how digital frames can transcend national boundaries, connecting dispersed actors into a shared repertoire of contention (McCoy, 2020).

Another fundamental concept is the repertoire of contention, defined by Tilly as the set of forms of protest prevalent in a particular time and place. Repertoires evolve historically, while 18th-century Europeans relied on food riots and petitions, the 20th century saw strikes, demonstrations, and sit-ins become dominant. Repertoires are not entirely flexible. They are shaped by cultural traditions, organizational capacity, and the responsiveness of authorities. In the digital age, repertoires have expanded to include online petitions, hashtag campaigns, and "protest camps" organized through social media (Wada et al., 2024). Hybrid repertoires combine street demonstrations with digital tactics, as seen during the Hong Kong Umbrella Movement, where encrypted messaging apps coordinated direct action on the ground (Agur & Frisch, 2019). Similarly, climate justice activists like Fridays for Future used school strikes and digital amplification to reach a global audience. In Indonesia, the Coalition for Serious Revision of the Electronic Information and Transactions Law (ITE Law) combined legal advocacy, public petitions, and digital campaigns

to press for legislative change, illustrating how traditional repertoires (litigation, lobbying) intertwine with new digital strategies (Matteo Spini et al., 2023). Repertoires also reflect tactical innovations in responding to repression. When authorities restrict offline gatherings, activists may turn to online forums. When censorship increases, they may adopt memes, satire, or coded language to evade surveillance. Thus, the repertoire is a dynamic expression of the ongoing adaptation between dissidents and authorities.

The digital transformation has fundamentally transformed contentious politics. Scholars have debated whether digital media lowers barriers to participation or encourages shallow "clicktivism." On the one hand, platforms like Twitter and Facebook provide low-cost channels for mobilization, rapid information dissemination, and transnational solidarity. The Arab Spring is often referred to as the "Facebook revolution," and the hashtag #Jan25 epitomizes the role of digital infrastructure in the Egyptian uprising. On the other hand, critics warn that online mobilization can replace deeper organizational commitment, resulting in short-term waves of protest without lasting institutional change (Cruz Crespo & Cruz, 2023).

The edited volume, "Controversial Politics in a Digital World," highlights three key transformations. First, digital infrastructure creates new arenas of contention, where activists, governments, and corporations compete for visibility and legitimacy (Earl et al., 2022). Second, digital platforms foster polarization and echo chambers, which reinforce ideological divisions and reduce the possibility of deliberation. Third, they introduce new forms of surveillance and repression, as states use digital tools to monitor, discredit, or divide movements. These dynamics illustrate the ambivalence of digital disputes. While expanding mobilization opportunities, they also exacerbate vulnerabilities to manipulation and control (Kim, 2023). Global surveys of digital protests reveal both empowerment and fragility. In Hong Kong, protesters used AirDrop and encrypted apps to coordinate leaderless demonstrations, demonstrating

resilience under authoritarian pressure (Hui, 2022). In contrast, the movement in post-coup Myanmar in 2021 faced swift repression when the military shut down internet access and tracked digital activists (secdev-foundation.org, 2025). Even in democratic contexts, disinformation campaigns and platform algorithms shape the visibility of protest narratives. Indonesia offers a relevant illustration, while student protests against the Omnibus Law mobilized massive online support, state-aligned actors spread disinformation to delegitimize protesters, while police monitored digital spaces to prevent mobilization (Fattan Widodo, 2024).

Controversial political theories remain crucial in analysing protests, both in the analogy and digital eras. Political opportunities, framing processes, and repertoires of action continue to shape mobilization, even as digital technologies transform its modalities (Dahlberg-Grundberg, 2016). Opportunities and threats now encompass not only institutional opportunities but also algorithmic bias, platform governance, and digital surveillance. Framing battles are taking place not only in mainstream media but also in networked publics, where disinformation circulates rapidly. Repertoires combine street demonstrations and digital campaigns, creating hybrid forms of contention (Wilding et al., 2018). Contemporary protest studies must therefore struggle with a paradox: digital infrastructure simultaneously expands the reach of collective action and intensifies its vulnerabilities. Understanding this duality requires integrating classical theories of contentious politics with insights from digital media studies. It also requires a comparative perspective, as the capabilities of digital technologies intersect across political regimes. Authoritarian states can weaponize digital tools to suppress dissent, while democracies struggle with disinformation and polarization. In all cases, contentious politics in the digital age reveals the enduring relevance of classical concepts and the need for theoretical innovation.

Deliberative Democracy & Epistemic Power

The relevance of these debates is evident in Indonesia, where processes of public deliberation are now deeply shaped by digital media and frequently disrupted by disinformation. Situating Indonesian democracy against the normative framework of deliberative theory offers a useful vantage point for examining the extent to which current practices diverge from, or remain consistent with, those ideals (Muhammad, 2024). The normative ideal of democracy has always rested not only on voting and representation procedures, but also on the quality of the public reasoning that citizens and institutions use to justify decisions (Cowen et al., 2025). The deliberative democratic tradition, most prominently associated with Jürgen Habermas, John Dryzek, and Joshua Cohen, emphasizes that legitimate democratic decisions emerge from inclusive, reasoned, and respectful deliberation among free and equal citizens (Kuyper, 2012). Deliberation, in this sense, requires more than simply aggregating preferences. It requires the exchange of arguments, the weighing of evidence, and the search for shared understanding. Within this tradition, the public sphere is conceptualized as a communicative infrastructure where individuals gather to debate issues of common concern. Habermas (1989) famously described the 18th-century bourgeois public sphere as a space where reasoned debate constrained arbitrary power. For deliberative democracy to function, citizens must have access to accurate information, opportunities for engagement across differences, and norms that prioritize rational discourse over manipulation. Thus, epistemic qualities, the reliability, validity, and inclusiveness of information are central to democratic legitimacy (Heller & Rao, 2015).

Deliberative theorists argue that democracy has an epistemic dimension. It is not simply a mechanism for aggregating preferences, but also a process for generating knowledge about collective problems. As Anderson (2008) argues, democratic procedures have "epistemic value" because they increase the likelihood of reaching sound or just decisions. This epistemic function relies on diverse perspectives, shared

justification, and reasoned debate. When accurate information and arguments are critically evaluated, deliberative decision-making can produce outcomes that approximate truth, justice, or at least informed compromise. The epistemic dimension also underlies the concept of epistemic power (Anderson, 2008), defined by Miranda Fricker (2023) as the ability to shape what counts as knowledge and who is recognized as credible (Fricker, 2023). In a political context, epistemic power refers to the capacity of actors whether states, media organizations, or social movements to control the flow of information, set agendas, and frame issues in ways that influence public reasoning. Thus, democratic deliberation depends not only on formal inclusion but also on the distribution of epistemic power. When certain voices are silenced or when information is distorted, deliberation is hampered (Archer et al., 2020).

In contemporary politics, the rise of disinformation (intentionally false or misleading information disseminated for political or economic gain) poses profound epistemic challenges. Unlike misinformation, which is unintentionally false, disinformation is strategic, designed to manipulate perceptions and undermine trust. The digital media environment amplifies these challenges: algorithmic curation, virality, and echo chambers facilitate the rapid spread of falsehoods, often faster than corrections (Shin & Shin, 2025). The consequences for deliberative democracy are profound. First, disinformation erodes the shared factual basis necessary for meaningful debate. When citizens cannot agree on basic facts, deliberation devolves into parallel monologues rather than reasoned arguments. Second, disinformation polarizes the public by exploiting identity-based divisions. Research shows that fake news is more likely to trigger strong emotional reactions, which reinforces the boundaries between in-groups and out-groups. Third, disinformation delegitimizes institutions by casting doubt on electoral integrity, media credibility, or judicial impartiality (Curato & Tomacruz, 2025). The 2016 US presidential election illustrates how domestic and foreign disinformation campaigns distort public discourse, while the Brexit debate revealed how

misleading claims can decisively shape political outcomes (Allcott & Gentzkow, 2017).

Outside the West, similar dynamics are evident. In India, WhatsApp has become a major vector of political disinformation, fuelling communal violence and shaping electoral behaviour. In Brazil, a coordinated network of "fake news factories" has influenced the presidential campaign and undermined trust in democratic institutions (Farooq, 2018). In Indonesia, civil society watchdogs like MAFINDO have documented how political hoaxes dominate the online disinformation landscape, from rumours of election fraud to delegitimizing narratives about protest movements. During the 2020 Omnibus Law protests, disinformation portraying demonstrators as brutal "anarchists" demonstrated how epistemic manipulation is used to justify state repression (MAFINDO, 2024).

The spread of disinformation is closely linked to processes of polarization. Deliberative democracy presupposes that citizens are willing to engage across differences, listen to opposing views, and revise preferences based on common sense. However, the digital media ecosystem often produces the opposite: algorithmic personalization and homophily create echo chambers and filter bubbles, where individuals are primarily exposed to perspectives that resonate with them (Vasist et al., 2024). This fragmentation reduces opportunities for cross-sector dialogue while reinforcing cognitive biases such as confirmation bias. Polarization also shifts discourse norms. Instead of mutual validation, interactions become adversarial, with opponents portrayed as enemies rather than interlocutors. Disinformation thrives in polarized contexts because citizens are more likely to believe and share information that affirms group identity, regardless of its factual accuracy (Piksa et al., 2024). The promise of deliberative democracy is not only epistemic improvement but also mutual recognition, disinformation erodes both, replacing deliberation with suspicion and antagonism (Lewandowsky et al., 2023). Understanding the challenges of disinformation requires attention to epistemic power in the digital context.

Epistemic power is exercised not only by states but also by platforms, algorithms, and non-state actors. Social media companies, through their design choices, wield enormous epistemic influence by determining what information users encounter. Governments employ digital surveillance and information operations to shape narratives. Activists and movements, in turn, contest epistemic power by fact-checking, reframing, or creating counter-narratives. For example, during the COVID-19 pandemic, governments attempted to exercise epistemic authority by promoting scientific guidelines, while conspiracy theorists mobilized online counter-epistemic communities (Hutchings, 2025). During the Hong Kong protests, activists created decentralized verification networks to combat state disinformation, an example of grassroots epistemic resistance. In Indonesia, initiatives like MAFINDO's "Hoax Buster Tools" reflect civil society efforts to reclaim epistemic power by empowering citizens to verify information. These examples illustrate how contests over knowledge are central to contemporary contentious politics.

Thus, the digital environment multiplies sites of epistemic contestation. In contrast to the Habermasian model of a unified public sphere, today's publics are fragmented, overlapping, and asymmetric in terms of power (Mah, 2000). Epistemic power is concentrated in platform companies that prioritize engagement over accuracy, while disinformation entrepreneurs exploit these incentives for profit or political gain. Meanwhile, marginalized voices often face epistemic injustice, being disbelieved or ignored even when speaking from lived experience. This unequal distribution of epistemic power undermines the inclusive and truth-tracking functions of deliberative democracy. Given these challenges, academics have begun exploring the notion of epistemic resilience, the capacity of democratic systems and the public to counter disinformation while maintaining deliberative integrity. Strategies include media literacy education, independent fact-checking, algorithmic transparency, and institutional safeguards against manipulation. However, resilience also depends on instilling norms of digital

citizenship, encouraging citizens not only to consume information critically but also to participate ethically in the information ecosystem (Hutchings, 2025).

For deliberative democracy to adapt in the digital age, it must grapple with the realities of disinformation and the unequal distribution of epistemic power. This requires bridging deliberative theory with empirical studies of digital media, contentious politics, and civil society practices. The challenge is not only technological, but also political. Who controls the conditions for knowledge production, and how can these conditions be democratized? Deliberative democracy provides a powerful normative vision of democratic legitimacy rooted in reasoned discourse and epistemic quality. However, the rise of disinformation and polarization in the digital age threatens the very conditions that enable deliberation to flourish (Esau, 2025). Epistemic power, once largely exercised by the state and mainstream media, is now distributed across digital infrastructure, with both authoritarian and democratic actors contesting the boundaries of truth. The rise of global disinformation campaigns, from the US election to WhatsApp politics in India and the delegitimization of protests in Indonesia, demonstrates that epistemic challenges are systemic, rather than incidental (Bradshaw, 2020). To sustain deliberative democracy, academics and practitioners must focus on enhancing epistemic resilience, redistributing epistemic power more equitably, and fostering digital citizenship. Only then can the promise of deliberation as a means of producing legitimate, informed, and inclusive decisions be renewed in the face of post-truth politics. Yet, despite the global prominence of studies on disinformation and epistemic resilience, systematic analyses of how these dynamics unfold in Indonesia remain limited (Mauk & Grömping, 2024). This chapter addresses that gap by examining the ways in which digital disinformation has reshaped contentious politics and by assessing the extent to which civil society organizations have been able to cultivate epistemic resilience within Indonesia’s democratic context.

Organizational Resilience & Digital Citizenship

While the literature on contentious politics and deliberative democracy highlights the structural and epistemic dimensions of collective action, movement resilience also depends on its organizational capacity. Organizational resilience, the ability of groups to adapt, persist, and thrive in hostile or uncertain environments has become a key theme in social movement studies, particularly in the context of digital transformation and disinformation. Concurrently, the concept of digital citizenship has emerged to describe the skills, norms, and practices that enable individuals and communities to navigate the digital environment responsibly, ethically, and effectively. Together, these frameworks explain how civil society actors maintain democratic engagement amidst polarization, repression, and epistemic disruption.

Organizational resilience in contentious politics can be traced back to the tradition of resource mobilization (Giugni & Grasso, 2018). Movements persist not simply because of grievances or opportunities, but because they are able to mobilize resources such as financial, human, informational, and organizational. However, resilience goes beyond the accumulation of resources. It encompasses the capacity to withstand shocks, adapt strategies, and maintain identity coherence in turbulent environments. Sociologists of organizations identify several dimensions of resilience. First, adaptive capacity, or the ability to reconfigure strategies and tactics in response to changing threats and opportunities (Khan et al., 2024). For example, when authoritarian regimes suppress street protests, movements may shift to digital campaigns or transnational advocacy (Ruijgrok, 2017). Second, network resilience, where decentralized or polycentric networks provide redundancy and flexibility. Leaderless or horizontally structured movements like Occupy Wall Street or the Hong Kong Umbrella Movement exemplify how distributed networks can persist even when prominent activists are arrested. Third, identity resilience, where collective identities maintain commitment despite setbacks (Agur & Frisch, 2019). Shared symbols, narratives, and

rituals can strengthen solidarity in times of repression. These dimensions are clearly observable in Indonesia. For instance, the #ReformasiDikorupsi movement in 2019 demonstrated adaptive resilience by shifting from street demonstrations to online campaigns when state repression intensified. Similarly, SAFEnet (Southeast Asia Freedom of Expression Network) illustrates networked resilience, as it connects activists, lawyers, and journalists to safeguard digital rights and provide rapid responses to cases of online repression. Both examples highlight how resilience in Indonesian civil society is not only theoretical but also practiced in everyday contentious politics (Schäfer & Syam, 2024).

From a contentious political perspective, organizational resilience reflects the dialectic between challengers and authorities. States employ coercion, co-optation, and delegitimization, while movements counter these through adaptation, innovation, and coalition building. For example, feminist movements in Latin America have maintained resilience by shifting between grassroots organizing, institutional advocacy, and digital campaigns depending on the political climate. Similarly, civil society in Indonesia has repeatedly adapted to restrictive laws such as the Electronic Information and Transactions Law (UU ITE) by building broad-based coalitions and leveraging digital platforms to publicize violations. The digital environment presents both opportunities and vulnerabilities for organizational resilience. On the one hand, digital platforms reduce coordination costs, expand reach, and enable the rapid dissemination of information. Social movements can mobilize large crowds with limited resources, as seen in the viral spread of hashtags like #BlackLivesMatter or #MeToo. On the other hand, reliance on digital infrastructure exposes movements to new risks such as algorithmic suppression, platform bans, surveillance, and disinformation campaigns (Vasist et al., 2024).

Digital conflict experts highlight the problem of platform dependency. Movements often rely heavily on commercial

platforms whose design priorities (maximizing profit and engagement) are at odds with democratic goals. Algorithmic bias can amplify sensational content while suppressing nuanced deliberation. Furthermore, authoritarian regimes exploit digital infrastructure through surveillance, cyberattacks, and coordinated information operations. The repression of activists in Myanmar following the 2021 coup illustrates how digital footprints can be weaponized against dissidents. In Indonesia, police and state-affiliated actors have monitored social media to identify protest leaders, while cyber troops spread disinformation to divide the opposition coalition (secdev-foundation.org, 2025). Resilience in these conditions requires not only organizational adaptation but also epistemic defence mechanisms. Civil society groups are increasingly establishing fact-checking teams, secure communication protocols, and transnational solidarity networks to counter disinformation and repression. For example, the European youth climate movement, Fridays for Future, has developed a global verification network to ensure message consistency across dozens of countries. Groups in Indonesia such as SAFEnet and MAFINDO have pioneered digital literacy programs and anti-hoax initiatives, reflecting how organizational resilience today requires digital capacity in addition to traditional advocacy (MAFINDO, 2024).

In line with organizational resilience, the concept of digital citizenship has gained prominence in academic and policy debates. Originally defined by Mossberger, Tolbert, and McNeal (2008) as the ability to participate in online society, digital citizenship encompasses not only technical access but also civic engagement, critical literacy, and ethical responsibility. In democratic theory, digital citizenship represents the micro foundations of a resilient digital public sphere (Jæger, 2021). Academics have identified several dimensions of digital citizenship:

1. Information verification: the capacity to evaluate the credibility of information sources, detect disinformation, and apply critical thinking to online content.

2. Ethical digital behaviour: norms of civility, respect, and privacy in digital interactions, combating harassment, hate speech, and manipulative practices.
3. Participatory engagement: active involvement in civic and political life through digital tools, from signing petitions to organizing campaigns and contributing to public debates.
4. Digital rights awareness: knowledge of the rights to privacy, freedom of expression, and protection from surveillance, as well as advocacy for digital inclusion (Schäfer & Syam, 2024).

These dimensions align closely with the challenges identified in deliberative democracy and contentious politics. Verification counters epistemic threats, ethical norms foster deliberative quality, and participatory engagement expands contentious repertoires. In this respect, digital citizenship provides an individual-level counterpart to organizational resilience, while organizations adapt structurally, citizens develop competencies that underpin democratic participation (Çiçek, 2024). Global cases illustrate how digital citizenship practices contribute to democratic resilience. During the 2019 Hong Kong protests, activists used decentralized information verification to counter state propaganda, ensuring that protest logistics and messaging remained credible. In the United States, grassroots fact-checking communities emerged to challenge disinformation during elections, albeit with mixed success given the scale of manipulation. In Europe, the rise of youth climate movements demonstrated how digital citizens can mobilize across borders, translating online activism into street protests and policy advocacy. Indonesia provides a further illustration of the intersection between resilience and digital citizenship. During the Omnibus Law protests, students and activists used Twitter hashtags to coordinate actions and disseminate counter-frameworks to delegitimizing narratives. Civil society groups developed infographics and digital tools to educate the public about the law's implications, reflecting practices of digital literacy and participatory engagement. At the same time, the

spread of disinformation and threats of online repression highlighted the fragility of these efforts, underscoring the need for ongoing digital citizenship education (Karanfiloğlu & Sağlam, 2023).

Although often discussed separately, organizational resilience and digital citizenship are closely intertwined. Organizations rely on citizens digital skills to maintain credibility, while citizens rely on resilient organizations to sustain collective action. Fact-checking, for example, requires both organizational infrastructure (databases, volunteers, institutional legitimacy) and individual capacity (critical evaluation, responsible information sharing). Similarly, protecting activists from digital repression requires organizations to provide training and secure platforms, while digital citizens must adopt privacy practices. This interplay reflects a broader theoretical synthesis: contested politics in the digital age is not just about mobilization and repression, but also about maintaining the epistemic and organizational infrastructure for democracy. Without resilient organizations, digital citizenship risks fragmentation and ephemerality. Without empowered digital citizens, organizations cannot maintain legitimacy or mobilize effectively.

The combined perspective of organizational resilience and digital citizenship leads to a broader framework of democratic resilience in contentious politics. This framework emphasizes three dimensions:

1. Structural resilience: the ability of organizations and networks to adapt tactically and strategically in hostile environments.
2. Epistemic resilience: the capacity to maintain credible information flows, counter disinformation, and uphold deliberative quality.
3. Civic resilience: the cultivation of digital citizens who practice critical literacy, ethical responsibility, and active participation (Tengblad & Oudhuis, 2020).

Building democratic resilience requires synergy between these dimensions. Internationally, lessons from cases such as Hong Kong, the Arab Spring, and youth climate strikes demonstrate both the potential and fragility of digital contention. For Indonesia and other democracies in the global south, the challenge is particularly acute: digital infrastructure offers unprecedented channels for mobilization, but also increases vulnerability to state repression, oligarchic capture, and epistemic manipulation (Agur & Frisch, 2019; Brina Azhardiati et al., 2023).

Organizational resilience and digital citizenship are crucial lenses for understanding how movements and publics navigate the contentious politics of the digital age. Resilient organizations adapt their structures and repertoires to confront repression and disinformation, while digital citizenship equips individuals with the competencies to participate responsibly in online civic life. Together, these two form the foundation of democratic resilience, a capacity indispensable for societies grappling with polarization, disinformation, and authoritarian backsliding. In a world where digital infrastructure is both an enabler and a threat to democracy, fostering resilient organizations and empowered digital citizens is not an option, but a necessity. Whether in Hong Kong's encrypted networks, the European climate strikes, or Indonesia's anti-disinformation initiatives, the lesson is clear: the survival of democratic contestation depends on epistemic and civic capacities, as well as on political opportunities or material resources. By embedding organizational resilience in a culture of digital citizenship, democracies can better withstand the turbulence of post-truth politics and sustain contentious politics as a vital expression of democratic life (Hui, 2022).

METHODOLOGY

This study uses a qualitative research design to capture the complex interactions between disinformation, organizational practices, and democratic resilience in the context of protest movements. A qualitative approach is deemed appropriate given that the research questions focus on processes of meaning-making, framing, and organizational adaptation, rather than solely on measurable outcomes. By prioritizing depth over breadth, this approach enables a nuanced understanding of how digital infrastructure and disinformation shape contentious politics in contemporary Indonesia (Miles, Matthew B, Huberman, 1994).

This empirical strategy relies on three primary data sources: archival documentation, social media content, and elite interviews. Archival documentation includes media reports, press releases, and organizational statements produced during protest episodes, which provide insights into how movements and the state frame event in real-time. Social media content such as tweets, hashtags, memes, and viral narratives serves as a crucial data set for analysing how disinformation circulates, how activists counter-frame delegitimizing narratives, and how digital repertoires of contention evolve. Elite interviews with movement leaders, civil society representatives, journalists, and policymakers complement these sources by providing firsthand accounts of strategies, perceptions, and challenges. Triangulating these sources ensures a stronger understanding of discursive and organizational dynamics (Golafshani, 2003).

For data analysis, this study uses thematic discourse analysis combined with process tracing. Thematic discourse analysis is used to identify recurring frames, counter-frames, and epistemic struggles across media and digital platforms. This analysis illuminates how disinformation functions not only as fake content but also as a strategic intervention in the politics of knowledge. Process tracing, on the other hand, allows for the reconstruction of causal mechanisms linking disinformation to

organizational responses and state reactions over time. By carefully sequencing events, tracing turning points, and examining alternative explanations, this method clarifies how disinformation influences mobilization, framing, and repression.

The unit of analysis consists of three major protest episodes in post-Reformasi Indonesia: the 2020 Omnibus Law demonstrations, student-led protests between 2022 and 2024, and the ongoing mobilization around electoral reform. These cases were chosen for three reasons. First, these cases represent critical junctures in Indonesia's democratic trajectory, where contentious politics intersect with major institutional reforms. Second, these cases illustrate the importance of disinformation and digital infrastructure in shaping public discourse and state responses. Third, these cases provide a variety of organizational strategies, ranging from labour unions and student alliances to civil society coalitions, allowing for comparative insights into resilience and vulnerability (Bradley, 1993).

The methodological justification for this design rests on the need to analyse disinformation and organizational resilience not as static variables, but as dynamic, relational processes. Quantitative measures such as survey data or content counts can capture the prevalence of disinformation, but they cannot explain how narratives gain traction, how organizations adapt, or how state repression is legitimized. In contrast, a qualitative framework foregrounds the interplay between structure and agency, discourse and organization, digital infrastructure, and democratic practices. This framework allows researchers to situate disinformation within broader epistemic power struggles, explore how protest organizations recalibrate strategies in response, and assess the implications for the resilience of Indonesian democracy. In short, this methodology is designed to illuminate the relational connections between disinformation, organizational capacity, and democracy in practice. By combining archival and digital data with elite perspectives, and employing discourse analysis and process tracing, this study aims to capture the discursive contestations and organizational

adaptations that define contentious politics in Indonesia's digital age (Lacity & Janson, 1994).

PROTEST POLITICS IN INDONESIA'S DEMOCRACY

1. Historical Overview: Post-Reform Protest Patterns

The 1998 Reformation emerged from a multidimensional crisis (economic, political, and legitimacy). Massive student demonstrations and broader popular action forced Suharto to step down after 32 years in power. The momentum of this movement gave rise to structural reforms: amendments to the 1945 Constitution, decentralization, multiparty elections, and press freedom. However, the legacy of the New Order such as oligarchic networks, patronage, and militarism remained intact (Aspinall & Fealy, n.d.). The early 2000s were marked by a diversification of protest actors. In addition to students, labour unions also gained strength through strikes and demonstrations demanding wage increases. Civil society organizations promoted human rights and transparency agendas. At the same time, communal conflicts in Maluku and Poso reflected a different face of protest: horizontal violence exacerbated by decentralization and local identity politics. Decentralization provided new spaces for political expression, but also gave rise to "little kings" in local politics, strengthening patronage networks. Local protests against mining, plantation, or land use permits became increasingly frequent (Umar, 2020).

In the 2010s, student and labour protests continued, but a new actor emerged: religious-based mobilization. The 212 Islamic Defenders demonstrations of 2016–2017 demonstrated the power of conservative Islamic politics in reshaping electoral dynamics. This mobilization differed from the student protests of 1998. Its movement was exclusive and identity-driven. At the same time, students regained prominence in 2019 when they protested the weakening of the Corruption Eradication Commission (KPK) and the Draft Criminal Code (RKUHP) (Kementerian Pendidikan & Kebudayaan dan KPK, 2012). This wave, popularly called Corruption Reform, underscored students'

enduring role as a moral political force. At the local level, protests also targeted so-called little kings (*raja kecil*) such as governors, mayors, and regents who were accused of corruption or abuse of authority (kompas.com, 2021). In places like East Java and North Sumatra, for example, demonstrations were frequently organized by student groups and local NGOs to challenge extractive projects or to demand accountability from regional leaders. These localized protests reveal how contentious politics was not confined to Jakarta, but became embedded in everyday struggles across Indonesia's provinces (Malinda, 2025).

Over the two decades of post-Reformasi politics, several patterns of protest can be identified:

- Decentralized mobilization from Jakarta to the provincial and district levels.
- Transformation of actors, from students to workers, NGOs, and religious groups.
- Diversification of the repertoire, from street demonstrations to digital campaigns.
- Ambivalent state responses, combining repression, co-optation, and adaptation.

These historical patterns also laid the foundation for later transformations in the digital era. While the earlier movements relied heavily on face-to-face organizing and printed media, the repertoire of protest has since expanded through social media platforms, which allow for faster mobilization and broader public reach. This continuity and change highlight why understanding the digitalization of protest is crucial for analysing Indonesia's more recent contentious politics (Ramadlan & Aminuddin, 2025).

2. Key Protest Episodes

The enactment of the Job Creation Law (Omnibus Law) in October 2020 sparked the largest national protests since 2019. This law, designed to simplify investment regulations, was widely rejected because:

- It compromised workers' rights (contract work, outsourcing, severance pay).

- It weakened environmental protections.
- It was hastily enacted without meaningful public participation (Sihombing & Hamid, 2020).

The protests against the Omnibus Law on Employment Creation in 2020 marked one of the largest waves of contention in post-Reformasi Indonesia. Students, labor unions, and civil society organizations mobilized across major cities to challenge what they perceived as an undemocratic and pro-oligarchic legislative process. Digital platforms played a critical role in coordinating actions, spreading information, and amplifying resistance narratives, while at the same time being used by the state and its allies to delegitimize the protests through narratives of "anarchy" and violence. This episode illustrates how protest actors deployed new repertoires of contention, framed their struggle in ways that resonated with broad segments of society, and simultaneously faced disinformation campaigns that sought to delegitimize their claims(Debora, 2020).

Policy repression of journalists and workers as an indication of a democratic deficit, while Liputan6.com emphasized the government's positive narrative of improving the investment climate and portrayed authorities as managing the unrest responsibly. The protests were characterized by (1) Cross-class coalitions: workers, students, academics, and community leaders united. (2) State violence: mass arrests, intimidation of journalists, and riots that caused damage to public infrastructure. (3) Disinformation: claims of "hidden actors" orchestrating the violence, as reported by mainstream media. A 2020 article in MK News highlighted that student protests against the Omnibus Law reflected real dissatisfaction among youth with elite-driven policies, despite official efforts to delegitimize the movement by calling it a provocation (Oberschall, 1973).

Subsequent protests between 2022 and 2024 reflected both continuity and change in contentious politics. Demonstrations emerged around rising fuel prices, revisions of the Criminal Code, and electoral controversies, again drawing in

students, labour, and grassroots communities. Much like earlier movements, these protests expressed frustration with state responsiveness and elite capture of democratic institutions. Unlike earlier mobilizations, however, these protests were deeply shaped by digitalization. Platforms such as TikTok and Instagram not only provided tools for rapid dissemination of protest symbols and messages, but also created new forms of visual storytelling that attracted younger participants and amplified public attention beyond conventional activist circles. Electoral reform has been a contested arena since the early 2000s. While the introduction of direct elections in 2004 expanded popular participation, it also entrenched practices of vote-buying and identity-based mobilization that reinforced oligarchic politics. The 2019 election represented a critical juncture: the largest protests occurred after the General Elections Commission (KPU) declared Jokowi–Ma'ruf the winner. Supporters of Prabowo Subianto rejected the results, leading to riots on May 21–22, 2019, in Jakarta, which resulted in several deaths and widespread repression by security forces. Disinformation circulated widely during this period, with social media platforms amplifying claims of electoral fraud and conspiracy theories that polarized the public (Muliawati, 2025).

Ahead of the 2024 elections, student protests against proposals to postpone the vote reflected growing concerns about the erosion of Indonesia's democratic safeguards. While smaller in scale than the 2019 unrest, these demonstrations underscored the role of youth and campus-based groups in defending procedural democracy. Digital platforms again played a dual role. They enabled rapid mobilization and symbolic framing of opposition to postponement, but they also provided fertile ground for competing narratives such some mobilizing civic vigilance, others spreading distrust in electoral institutions. This duality illustrates how electoral contention in Indonesia increasingly hinges on digital repertoires of protest, where framing battles and disinformation are central to shaping legitimacy.

Table 1. Major Protest Episodes in Post-Reformasi Indonesia

Protest Episode	Core Issue	Key Actors	Repertoires of Action	Role of Digital Platforms	Disinformation / Framing
Omnibus Law 2020	Opposition to the Job Creation Law, criticized as oligarchic and threatening labour and environmental rights	Student groups, labour unions, NGOs, civil society networks	Mass demonstrations, strikes, online petitions, hashtag campaigns (#TolakOmnibusLaw)	Twitter and Instagram used for coordination and narrative dissemination; WhatsApp for internal communication	Protesters framed as "anarchists" or manipulated actors; widespread circulation of false claims about the content of the law
Protests 2022–2024	Fuel price hikes, revisions of the Criminal Code, and debates over election postponement	Students, labour groups, grassroots communities	Street rallies, long marches, creative posters, theatrical performances, viral campaigns	TikTok and Instagram enabled visual storytelling and youth engagement; live-streaming amplified visibility; memes circulated widely	Students framed as "provocateurs" or foreign-backed; counter-narratives emerged through fact-checking initiatives and activist-driven memes
Electoral Reform (2019 & 2024)	Disputed election results (2019); rejection of proposals to delay the 2024 elections	Supporters of Prabowo (2019); students and pro-democracy groups (2024)	Mass demonstrations in Jakarta (2019); campus protests and online petitions (2024)	Facebook and WhatsApp spread fraud allegations in 2019; Twitter and Instagram facilitated rapid student mobilization in 2024	Disinformation on "systematic fraud" (2019) and framing of an "authoritarian regime" (2024); counter-frames emphasized procedural democracy

Sources: (Sihombing & Hamid, 2020; tempo.co, 2016)

3. State and Institutional Responses: Repression, Co-optation, and Adaptation

Repression has remained the dominant strategy of the Indonesian state in dealing with waves of protest. During the Omnibus Law demonstrations of 2020, security forces repeatedly deployed tear gas, water cannons, and mass arrests to disperse crowds across major cities. According to data from KontraS (2020), at least 6,600 people were detained during the peak of the protests, while hundreds sustained injuries due to excessive use of force. Beyond the physical containment of street demonstrations, repression has also extended into the digital sphere. The Electronic Information and Transactions (ITE) Law has increasingly been weaponized against activists, journalists, and ordinary citizens who voice criticism online, with SAFEnet documenting a steady rise in digital criminalization cases since 2016. Militarization of public space further underscores the persistence of authoritarian legacies: despite formal reforms that ended the dwifungsi doctrine, the Indonesian military continues to engage in domestic security operations under the justification of maintaining order (Ressmy et al., 2023).

Co-optation constitutes another central dimension of state response. Rather than suppressing movements outright, the government often seeks to incorporate and neutralize dissenting voices. This can be seen in the recruitment of prominent student leaders and labour figures into government structures, including appointments as ministerial advisors or members of consultative bodies. Tripartite forums between government, employers, and unions have similarly functioned less as genuine sites of negotiation and more as mechanisms to absorb and dilute demands. At times, selective benefits such as funding, facilities, or legal recognition are extended to student or labour organizations, creating divisions within movements and weakening their solidarity. Such strategies have the effect of fragmenting oppositional blocs, blurring the boundary between co-opted activists and independent actors, and undermining the capacity of civil society to sustain collective resistance.

Adaptation, finally, represents a more limited and selective mode of state response. Following the 2019 student-led protests against the controversial revisions of the Criminal Code, the government agreed to postpone the enactment of certain articles, signalling a degree of responsiveness to public pressure. Similarly, state actors have refined their strategic communication, framing contentious policies within narratives of economic growth, national stability, and modernization in order to defuse opposition. Formal mechanisms of participation, such as parliamentary hearings or public consultations, provide channels for citizens to voice concerns, but these are often symbolic rather than substantive. They rarely address underlying structural injustices or power asymmetries that fuel protest in the first place. Consequently, while adaptation may temporarily alleviate tensions, it fails to resolve deeper grievances, allowing the cycle of contentious mobilization to persist (Simmons, 2014).

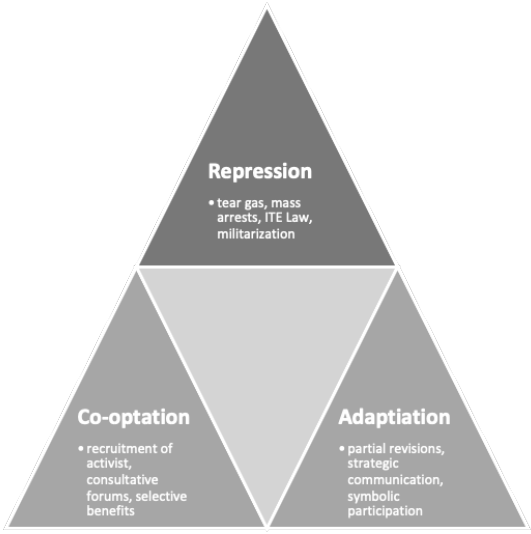

Fig.1. State Responses to Protest in Indonesia
Source: It was created by the Authors

DISINFORMATION AND THE DIGITAL MEDIATION OF PROTEST

Disinformation as a Political Instrument: Production, Circulation, and Consumption of Hoaxes

In the digital era, disinformation has become a rampant instrument in Indonesian politics. Hoaxes and misleading narratives are deliberately produced to shape public opinion, delegitimize protest movements, and protect ruling elites. Hoax production is often systematic: narratives are crafted by political consultants, media entrepreneurs, or partisan digital volunteers (buzzers) who exploit the speed and reach of online platforms. Circulation relies heavily on the social media ecosystem. WhatsApp groups, Twitter hashtags, and Facebook pages enable disinformation to spread rapidly through networks of friends, family, and ideological communities. Studies of Indonesian digital politics have shown that disinformation circulates in a way that exploits affective bonds. People are more likely to share information that aligns with their identity or emotions, regardless of its factual accuracy (Prabowo & Arofah, 2017; Suryo & Aji, 2019).

Consumption of hoaxes often occurs in contexts where trust in mainstream media or state institutions is low. Protesters, sympathizers, and the wider public interpret and disseminate information based on pre-existing beliefs. For example, during the 2020 Omnibus Law protests, narratives circulated claiming that students were "paid demonstrators" or that the violent riots were being carried out by "anarcho-syndicalist groups," effectively delegitimizing the movement's authenticity (indonesia.go.id, 2019; Sihombing & Hamid, 2020).

Actors Benefiting from Disinformation

Disinformation in Indonesia does not emerge randomly as a side effect of digitalization, it operates as a deliberate instrument of political contestation. Multiple actors such us state

and non-state alike, derive benefits from the circulation of misleading narratives, each pursuing distinct strategic interests. Political elites constitute the most visible beneficiaries. Government officials and ruling coalition parties frequently employ disinformation to undermine the legitimacy of protests, portraying demonstrators as violent, anarchic, or manipulated by foreign actors. During the 2020 Omnibus Law protests, for instance, the coordinating minister for Political, Legal, and Security Affairs publicly claimed that "anarchist groups" had infiltrated student demonstrations, a narrative widely amplified across mainstream and digital media. By framing dissent as a threat to national stability, ruling elites not only delegitimize protest demands but also rationalize the deployment of coercive measures (Debora, 2020).

Security forces particularly the police and military, also gain from the spread of disinformation. Narratives that emphasize chaos and disorder allow these institutions to position themselves as indispensable guarantors of public security. Human rights groups such as KontraS have documented how the framing of protests as riots has been systematically used to justify the use of excessive force and to expand the operational scope of security agencies in domestic affairs. In this way, disinformation serves as a legitimizing resource that strengthens institutional authority. The role of digital entrepreneurs and partisan "buzzers" further underscores the political economy of disinformation. Paid influencers, troll farms, and coordinated partisan networks profit financially by generating and amplifying content aligned with the interests of political patrons or corporate clients. Research by the Institute for Policy Research and Advocacy highlights how buzzer networks tied to both government actors and business conglomerates have been mobilized to flood the digital sphere with narratives supporting controversial policies. Such arrangements illustrate how disinformation operates not only as a political weapon but also as an economic enterprise (Blomkamp et al., 2018; Datta et al., 2011).

Finally, opposition groups are not immune from weaponizing disinformation for their own purposes. In the aftermath of the 2019 elections, elite supporters of Prabowo Subianto circulated claims of "systematic fraud" and conspiracy theories regarding electoral manipulation, narratives that fuelled mass unrest in Jakarta. These framings sought to amplify grievances by portraying the state as irredeemably corrupt and authoritarian, regardless of available evidence (Nurfebriansyah et al., 2025). Taken together, these dynamics demonstrate that disinformation in Indonesia is a contested arena in which both state and opposition actors seek advantage. Far from being a neutral by-product of digitalization, disinformation functions as a purposeful instrument of political struggle, shaping not only public perceptions but also the distribution of legitimacy and power within Indonesia's democratic arena.

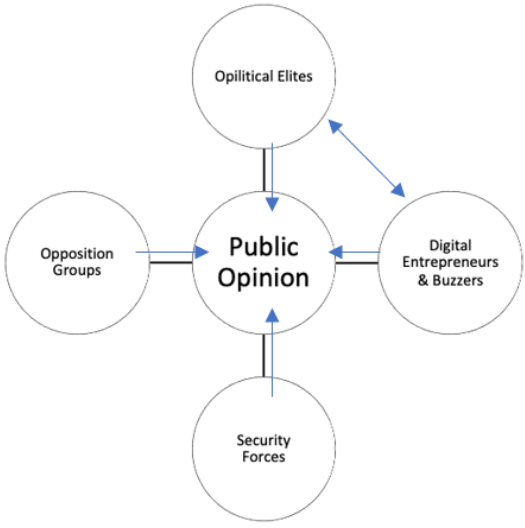

Fig.2. Ecosystem of Disinformation of Indonesia
Source: It was created by the Author

Impact on Mobilization and Framing: Disinformation and the Fragmentation of Solidarity

Disinformation most directly impacts protest movements by weakening solidarity. Narratives that label protesters as violent rioters, foreign agents, or naive students weaken public sympathy. During the Omnibus Law protests, for example, viral claims that demonstrators were infiltrated by "black-clad anarchists" diverted attention from substantive labour rights issues to security and criminality. Similarly, in the 2019 and 2022 student protests, hoaxes suggested that organizers were secretly affiliated with political parties, fuelling distrust within and outside the movement. Such narratives not only delegitimize the protests in the eyes of the wider public but also divide the movement internally. Accusations of infiltration create suspicion among activists, erode organizational cohesion, and reduce the capacity for sustained mobilization.

Civil Society Counternarratives

Despite significant structural challenges, civil society organizations in Indonesia have developed a range of counternarratives to confront the pervasive influence of disinformation. One important strategy has been the establishment of fact-checking initiatives. The Indonesian Anti-Slander Society (Mafindo), along with several independent media platforms such as Tempo and Tirto, has played a central role in rapidly verifying viral claims and publishing corrections through social media channels. Mafindo's fact-checking portal, turnbackhoax.id, documented more than 2,000 false claims related to politics and governance between 2018 and 2021, underscoring the scale of misinformation circulating in the digital public sphere. These initiatives provide citizens with credible alternatives, even though their corrective messages often circulate within limited information bubbles (MAFINDO, 2024).
A second form of response has been movement-led digital campaigns. Protest organizers, particularly during the 2019 student mobilizations and the 2020 Omnibus Law demonstrations, relied on hashtags, infographics, and livestreams

to frame their actions as peaceful and legitimate expressions of dissent. The hashtag #ReformasiDikorupsi, for example, not only mobilized tens of thousands of students nationwide but also drew international attention to Indonesia's democratic backsliding. Similarly, during the Omnibus Law protests, activists livestreamed demonstrations to highlight incidents of police violence and to counter official narratives of chaos. These digital repertoires reflect how movements adapt their communication strategies to the algorithmic logics of contemporary media environments.

A third counternarrative strategy has been the cultivation of solidarity networks that bring together students, labour unions, environmental NGOs, and professional associations. By framing their collective struggle under unifying slogans such as "Save Democracy" or "Reform is Corrupted", these coalitions attempt to transcend divisive narratives and reaffirm a shared civic identity. Research by Aspinall (2013) highlights how cross-sectoral solidarity has become crucial for sustaining mobilization in Indonesia, particularly when state actors and digital entrepreneurs attempt to fragment movements through targeted disinformation (Aspinall, 2013). Nevertheless, these counternarratives face enduring structural weaknesses. Disinformation spreads more quickly than corrections, largely because sensational content is more emotionally engaging and thus more likely to be amplified by platform algorithms. Studies of Facebook and Twitter in Indonesia demonstrate that fact-based corrections tend to receive significantly less interaction compared to emotionally charged falsehoods. Moreover, the logics of digital platforms favouring divisive and attention-grabbing material, often prevent counternarratives from reaching audiences beyond their immediate supporters. As a result, while civil society efforts to counter disinformation are vital, their effectiveness remains constrained by the broader political economy of the digital public sphere.

Digital Platforms and Infrastructure: The Role of Algorithms, Platform Ease, Structural Limitations

Digital infrastructures fundamentally shape how information about protests is produced, circulated, and consumed. Algorithms embedded in platforms such as Facebook, Twitter (now X), Instagram, and TikTok are designed to prioritize content that generates the highest levels of engagement (likes, shares, and comments) irrespective of its accuracy. This incentive structure privileges sensational and emotionally charged material, often allowing disinformation to trend more rapidly than factual reporting. During the 2020 Omnibus Law protests, for example, images of burning buses and vandalized public facilities circulated widely across multiple platforms. Some of these visuals were authentic, while others were manipulated or taken out of context, but all were boosted by algorithmic logics that reward virality. In turn, these depictions overshadowed protesters' substantive demands regarding labour rights, environmental protections, and democratic accountability. Studies on digital circulation in Indonesia confirm that disinformation framed in emotive and visual terms spreads significantly faster than corrective content (Nugroho, 2015; Nugroho, 2011).

The role of platform affordances also shapes the dynamics of digital contention. Twitter/X has served as a rapid mobilization tool, where hashtag-driven campaigns like #ReformasiDikorupsi allowed activists to coordinate across cities within hours. However, the same mechanism has also been exploited by organized disinformation campaigns that hijack trending hashtags to delegitimize movements. WhatsApp, by contrast, facilitates encrypted and intimate communication among activists, enabling secure coordination while simultaneously creating a closed environment where rumours and hoaxes spread unchecked. TikTok provides audio-visual immediacy and has been particularly attractive to younger demographics: short videos documenting police violence or creative protest performances often go viral. Yet, the same platform has also been used by state-linked actors and partisan

influencers to flood feeds with entertainment content or pro-government narratives, thereby diluting dissent. This duality demonstrates that platform affordances create opportunities for mobilization while simultaneously opening avenues for manipulation (Salleh et al., 2023).

At a deeper level, these infrastructures are constrained by structural limitations. Digital platforms are not neutral public arenas but commercial enterprises whose design reflects the imperatives of maximizing user engagement and advertising revenue. Consequently, companies are often reluctant or slow to curb the spread of disinformation unless compelled by strong state regulation or pressure from civil society. Content moderation practices also remain uneven: platforms frequently respond more swiftly to takedown requests from state authorities than to reports filed by activists or journalists. In Indonesia, government collaboration with major platforms under the banner of combating "hoaxes" has reinforced this asymmetry. Initiatives such as the Ministry of Communication and Information's "Cyber Drone 9" program claim to protect the public from harmful content, but watchdogs like SAFEnet (2021) argue that such mechanisms often result in overreach, with critical voices and dissenting content being censored under the guise of fighting misinformation (Pimay & Riyadi, 2019). Taken together, these dynamics underscore the ambivalent role of algorithms in contentious politics. While digital platforms provide unprecedented tools for mobilization, communication, and visibility, their design and governance structures systematically privilege disinformation and strengthen state control over information flows. The algorithmic architecture of Indonesia's digital sphere thus simultaneously enables resistance and entrenches repression, revealing the contradictions at the heart of contemporary digital democracy.

DIGITAL CITIZENSHIP AS ORGANIZATIONAL CAPACITY

Verification Skills: Digital Literacy and Fact-Checking Capacity

One of the most significant organizational resources in the digital age is the ability to verify information. Protest movements, student groups, and civil society organizations are increasingly recognizing that digital literacy is not just a technical skill, but a political necessity. The ability to fact-check claims, distinguish reliable sources from hoaxes, and strategically disseminate verified information determines an organization's resilience to disinformation. In Indonesia, initiatives such as Mafindo (Indonesian Anti-Defamation Society) and collaborative fact-checking with the media demonstrate an institutionalized approach to combating disinformation. Within protest organizations, verification practices often take the form of internal communication protocols, doubling-checking viral content before redistribution, creating infographics with verified statistics, or conducting live broadcasts to document events. Verification skills thus establish an organization's credibility. Movements that quickly debunk hoaxes, such as claims that protesters are "paid agitators," maintain greater legitimacy in the eyes of the public. Conversely, organizations that lack verification capacity risk being delegitimized, fragmented, or co-opted by false narratives (MAFINDO, 2024).

Ethical Engagement: Norms of Digital Political Participation

Digital citizenship is not just about technical competence but also about ethical norms of engagement. The rise of hate speech, trolling, and doxxing illustrates how the digital space can undermine democratic values if not guided by ethical commitments. For civil society, ethical digital engagement requires balancing the freedom to criticize with the responsibility to avoid spreading harmful stereotypes or inciting violence. Indonesian student and labour movements often articulate ethical norms through their communication strategies: using inclusive

language, emphasizing peaceful protest, and discouraging online harassment of opponents. Ethical engagement also involves accountability. Movements that uphold transparency such as disclosing funding sources for digital campaigns or clarifying organizational positions, strengthen their democratic legitimacy. Conversely, groups that rely on manipulative or deceptive digital strategies may reproduce the very illiberal practices they oppose. Thus, ethical digital engagement becomes a constitutive dimension of organizational capacity, strengthening the credibility and resilience of movements in a contested digital environment (Anugrah, 2020).

Civic Participation: Innovating Collective Action through Digital Platforms

Digital citizenship also expands the repertoire of civic participation. In addition to physical demonstrations, movements in Indonesia are now engaging in innovative digital activism:

- Hashtag campaigns such as #ReformasiDikorupsi or #TolakOmnibusLaw mobilize broad audiences, connecting diverse actors under a unified narrative.
- Petition platforms (e.g., Change.org Indonesia) enable citizens to pressure policymakers by collecting signatures and amplifying grievances.
- Fundraising initiatives support protest logistics, legal assistance for arrested protesters, and medical expenses for injured protesters.
- Livestreaming and citizen journalism document protest events in real time, countering state-controlled narratives (Debora, 2020; Sihombing & Hamid, 2020).

These innovations illustrate how digital infrastructure expands civic repertoires, lowering the threshold for participation, and enabling individuals unable to physically attend protests to contribute symbolically and materially. At the same time, digital citizen participation fosters trans local solidarity. Student protests in Jakarta can quickly gain support in Yogyakarta, Makassar, or Indonesian communities abroad, demonstrating how digital tools

extend the reach of organizations beyond geographic boundaries (Syaf, 2017).

Uneven Development of Digital Citizenship: Gaps Among Organizations, Institutions, and Communities

The expansion of digital citizenship in Indonesia has provided civil society actors with unprecedented tools for mobilization, advocacy, and participation. However, this development is uneven, shaped by disparities across organizations, institutions, and communities. These gaps reveal that digital citizenship is not a uniform capacity but one embedded within existing structures of social and political inequality. At the organizational level, large NGOs and student federations often enjoy significant advantages. Organizations such as Walhi (the Indonesian Forum for the Environment) or the Indonesian Student Alliance (AMI) have dedicated digital teams responsible for fact-checking, content production, and online campaign management. These capacities enable them to respond quickly to disinformation and amplify counternarratives. In stark contrast, grassroots movements including rural labour unions, fisherfolk associations, or village-based environmental groups frequently lack stable internet access, consistent funding, and technical expertise.

Institutional gaps are also evident. State agencies such as the Ministry of Communication and Information (Kominfo) frequently promote "digital literacy" campaigns under the banner of combating hoaxes. Yet, watchdog groups like SAFEnet argue that these initiatives often prioritize regime stability rather than genuine citizen empowerment, as they sometimes lead to over-policing of dissent rather than broad-based education. At the same time, universities and schools provide highly uneven digital education. Elite urban universities often integrate digital activism and media literacy into their curricula, while many public schools in rural areas lack the resources to provide even basic training. This results in generational and class-based divides in the ability to navigate online information ecosystems (kominfo.go.id, 2021). At the community level, socioeconomic inequalities shape

digital participation in profound ways. Urban middle-class communities, particularly in Java's metropolitan centres, are far more likely to engage in online activism and to mobilize through platforms such as Twitter or TikTok. In contrast, rural or marginalized communities especially in eastern Indonesia, face infrastructural limitations, cultural barriers, and limited exposure to digital organizing repertoires. Gender dynamics further compound these disparities. Female activists, in particular, often encounter disproportionate levels of online harassment and gendered disinformation campaigns, which can discourage participation or force them into self-censorship. A 2020 report by Amnesty International Indonesia documented how women activists and journalists experienced coordinated online intimidation during protests, illustrating how digital spaces reproduce offline inequalities (Amnesty, 2024, 2025).

Taken together, these uneven developments show that digital citizenship in Indonesia evolves not as a uniform democratic good but as a stratified capacity tied to organizational resources, institutional agendas, and social hierarchies. As a result, some protest movements demonstrate remarkable digital innovation, leveraging hashtags, livestreams, and infographics, while others remain marginalized and vulnerable to disinformation or surveillance. This stratification underscores the need to view digital citizenship not simply as an individual competency but as a politically contested resource, distributed unevenly across Indonesia's civil society landscape.

Table 2. Uneven Development of Digital Citizenship in Indonesia

Level	Actors	Capacities	Challenges	Examples
Organizational	Large NGOs, student federations, grassroots groups	NGOs/student bodies: digital teams, verification, content production; grassroots groups: limited access	Resource asymmetry; grassroots lack internet stability, literacy, technical expertise	Walhi, Indonesian Student Alliance (AMI) vs rural labor unions, fisherfolk orgs
Institutional	State agencies, schools, universities	Kominfo: hoax-fighting initiatives; elite universities: digital media training	State literacy programs prioritize regime stability; uneven school resources; generational gaps	Kominfo's "Cyber Drone 9" program; elite urban universities vs rural schools
Community	Urban middle class, rural/peripheral groups, female activists	Urban middle class: active in online activism; rural: limited participation; women: contribute but vulnerable	Socioeconomic inequality, infrastructural gaps, gendered harassment, cultural barriers	Jakarta student networks; marginalized groups in Eastern Indonesia; Amnesty 2020 report on women activists

ORGANIZATIONAL RESILIENCE IN THE POST-TRUTH ERA

The post-truth era has become one of the most defining features of contemporary politics and organizational life. The term itself refers to a condition in which objective facts are less influential in shaping public opinion than appeals to emotions and personal beliefs. Organizations operating in this environment whether state institutions, civil society movements, or private entities are required to maintain resilience against the spread of misinformation, the erosion of trust, and the structural vulnerabilities caused by unequal digital capacity across society. Resilience in this context does not simply mean survival in the face of external shocks. It also refers to an organization's ability

to adapt, transform, and maintain democratic legitimacy in an environment rife with disinformation and polarized public discourse. This essay examines organizational resilience in the post-truth era with a particular focus on three interrelated dimensions: digital citizenship as a political resource, the structural vulnerabilities created by unequal digital capacity, and the role of educational technology in maintaining democratic resilience. Taken together, these perspectives demonstrate that organizational resilience is not simply a technical or managerial issue, but rather a deeply political one, intertwined with power relations, resource distribution, and long-term strategies for democratic sustainability (Power, 2018).

Connecting Digital Citizenship to Resilience: Digital Literacy as a Political Resource

In the post-truth era, digital citizenship has emerged as a key determinant of organizational resilience. Digital citizenship refers to the norms, skills, and practices that enable individuals to engage responsibly, critically, and effectively in digital environments. Essentially, this involves not only technical access to digital platforms but also the capacity to evaluate information, detect manipulation, and participate in deliberations in ways that strengthen democratic institutions. When individuals and groups possess strong digital citizenship, organizations whether governmental, civil society, or corporate are better positioned to counter disinformation campaigns, maintain trust, and ensure operational continuity. Digital literacy is a crucial component of digital citizenship and serves as a political resource in at least three ways. First, digital literacy enables individuals to critically assess the credibility of online content. Without this capacity, organizations face reputational risks when false narratives about them spread unchecked. Second, digital literacy strengthens collective action. Social movements such as the global climate strike or protests against labour reforms rely on digitally literate participants who can mobilize, coordinate, and amplify messages online. Third, digital literacy enhances accountability. Citizens who understand how to verify information are better equipped to

hold governments and organizations to account, thereby strengthening institutional legitimacy (Salleh et al., 2023).

Empirical evidence illustrates the importance of this relationship. Surveys conducted across Southeast Asia reveal that most citizens still struggle to distinguish between accurate and misleading content, especially regarding political issues. In Indonesia, for example, a large majority of citizens reported being exposed to political hoaxes in the lead-up to the elections. For organizations in this context, resilience depends on developing digital literacy among their members and broader stakeholders. When digital citizenship is treated as a political resource, organizations not only protect themselves from reputational damage but also contribute to strengthening democratic resilience more broadly. Crucially, conceptualizing digital citizenship as a political resource shifts literacy from an individual capacity to a collective one. Organizations that invest in digital literacy initiatives whether through training, public campaigns, or partnerships effectively build a reservoir of resilience within their networks. These resources can be mobilized to counter disinformation, defend democratic norms, and support evidence-based policymaking. In the Indonesian case, initiatives such as Mafindo's turnbackhoax.id fact-checking platform and SAFEnet's digital rights campaigns exemplify how civil society actors treat digital literacy as a collective asset. By building coalitions that train communities to detect hoaxes and resist online intimidation, these organizations demonstrate how digital citizenship can evolve into a political resource that strengthens democratic resilience against disinformation and authoritarian drift (MAFINDO, 2024).

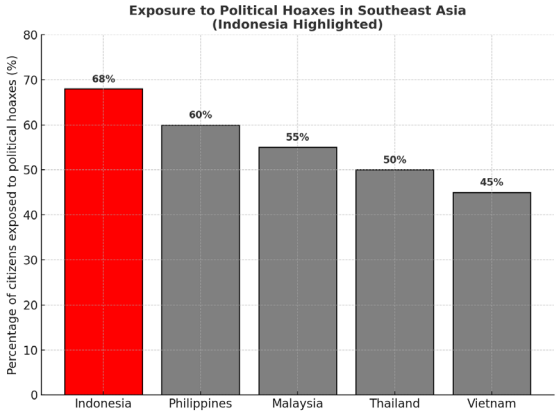

Fig.3. Exposure to Political Hoaxes in Southeast Asia (Cho, 2025)

Structural Vulnerability: Unequal Digital Citizenship and Organizational Weakness

While the importance of digital citizenship has been recognized, its capacity is not evenly distributed across society. Unequal access to infrastructure, educational opportunities, and socioeconomic resources creates a digital divide that generates structural vulnerabilities for organizations. This gap extends not only to technological access but also to skills and competency levels. In many countries, urban populations enjoy more reliable internet connectivity and greater exposure to digital education than rural populations. Similarly, higher-income groups are more likely to develop the critical thinking skills necessary to navigate complex information environments than lower-income groups. These gaps directly impact organizational vulnerability. Civil society organizations based in digitally disadvantaged communities may struggle to mobilize their members effectively, as misinformation spreads more easily among groups with limited digital literacy. Political parties may struggle to communicate their platforms if disinformation campaigns are more persuasive to constituents lacking critical digital skills. Even state institutions tasked with providing public services can be undermined when citizens distrust official communication

channels and instead rely on misleading narratives circulating online (Agarwal & Lim, 2014).

The structural nature of this vulnerability is reinforced by empirical data. In Indonesia, internet penetration has increased substantially, yet significant regional disparities persist. Urban centres have significantly higher levels of connectivity than rural areas, creating a dual information ecosystem. This inequality has practical consequences: during times of political contestation, communities with weaker digital literacy are more vulnerable to manipulation, making it difficult for organizations to maintain legitimacy or ensure effective participation. Similar patterns are seen globally. The World Bank has highlighted how low-income populations in many countries are more vulnerable to misinformation, not only due to limited access but also due to limited educational resources.

Structural vulnerabilities are also organizational. Within institutions themselves, differences in digital capacity can lead to uneven resilience. For example, organizations that invest in staff training on digital security and information literacy are better able to protect themselves from cyberattacks or reputational damage than those that do not. Conversely, institutions that neglect these investments remain fragile, with weaknesses that can be exploited in times of crisis. The implications for resilience are profound. Organizations cannot be resilient in contexts where a significant portion of their stakeholder base lacks the tools to critically engage with information. Unequal digital citizenship creates systemic weaknesses that cannot be easily addressed through reactive strategies. Instead, resilience requires proactive investments to reduce these inequalities, ensuring that the benefits of digital citizenship are widely distributed across society (Simsek et al., 2013).

Educational Technology as a Political Resource: EdTech and Digital Literacy Curriculum in Sustainable Democracies

Given the vulnerabilities created by uneven digital diversity, educational technology (EdTech) and digital literacy

curricula have emerged as strategic resources for building resilience. Educational technology encompasses a wide range of tools, platforms, and pedagogical innovations designed to enhance the learning process. When applied to strengthen digital literacy, EdTech can serve as a political resource, contributing to the long-term sustainability of democratic institutions. The logic is simple: if resilience requires digitally literate citizens and organizations, then education systems must integrate digital literacy as a core competency. Traditional approaches to media literacy education are often slow, fragmented, or optional. EdTech, in contrast, offers opportunities to scale, personalize, and embed literacy into everyday learning. Online platforms, interactive modules, gamified learning environments, and mobile apps can all be leveraged to teach critical thinking, fact-checking, and responsible digital engagement (Webster, 2025).

Concrete examples illustrate the potential of this approach. In Indonesia, the national digital literacy movement spearheaded by the Ministry of Communication and Informatics relies heavily on EdTech tools, ranging from online seminars to interactive modules. These initiatives have reached millions of citizens, raising awareness about digital security, online ethics, and information verification. Similar efforts in other contexts such as the European Union's focus on media literacy in its Digital Education Action Plan, demonstrate that EdTech can be institutionalized as part of a national strategy for democratic resilience. EdTech contributes to resilience in at least three ways. First, it expands literacy interventions beyond the traditional classroom, reaching potentially marginalized populations, including rural communities or working adults. Second, it enables iterative and adaptive learning. Platforms can update content in response to emerging disinformation strategies, ensuring that literacy programs remain relevant. Third, EdTech encourages participatory learning. By interactively engaging users, these platforms encourage citizens to take active responsibility for their digital environments, thereby strengthening democratic norms(Aguilar et al., 2024).

The use of EdTech as a political resource also transforms the concept of resilience. Rather than being reactive, resilience becomes anticipatory. Organizations and countries that integrate digital literacy curricula into long-term education strategies effectively protect their communities from future disinformation threats. This preventative approach reduces crisis response costs and fosters a culture of critical engagement that benefits organizations across sectors.

However, challenges remain. EdTech implementation must account for inequities in access. If not carefully designed, digital learning platforms risk reproducing the very inequalities they are intended to address, benefiting those with reliable internet access while excluding marginalized communities. Therefore, integrating EdTech into resilience strategies must be accompanied by efforts to expand infrastructure, subsidize access, and ensure inclusivity. When these conditions are met, EdTech becomes a cornerstone of sustainable democracy, anchoring organizational resilience in digitally competent citizens. Educational technology (EdTech) has become a central domain in shaping digital citizenship, particularly through its influence on literacy, civic engagement, and participatory culture. In Indonesia, universities, schools, and government programs have increasingly integrated digital platforms and tools into the educational sphere, yet the outcomes remain uneven (Lawelai et al., 2022; Syahputra, 2017). Overall, the role of EdTech in Indonesia highlights both opportunities and limitations. Universities and progressive schools have begun embedding digital literacy into their curricula, creating spaces for critical engagement. Yet systemic disparities in infrastructure and the state's tendency to frame literacy as a tool of control rather than empowerment illustrate the challenges ahead. Strengthening EdTech's contribution to digital citizenship therefore requires not only technical integration but also pedagogical transformation one that positions critical inquiry and civic responsibility at the core of education.

DISCUSSION

Synthesis of Findings: The Interplay between Protest, Disinformation, and Organizational Resilience

The findings presented in this study highlight the dynamic interplay between contentious politics, the circulation of disinformation, and the capacity of organizations to remain resilient. Protest movements in the post-truth era are both empowered and threatened by digital technologies. On the one hand, digital platforms enable rapid mobilization, amplification of grievances, and transnational solidarity. On the other hand, these same platforms are fertile ground for disinformation campaigns that fragment collective identities, delegitimize organizational claims, and undermine public trust. Indonesia's experience during the Omnibus Law protests (2020) and the subsequent student mobilizations (2022–2024) illustrate this duality. While digital tools facilitate mass participation and coordination, they also expose organizations to a wave of hoaxes, counter-narratives, and state-sponsored online propaganda. Organizational resilience in this context rests on the ability to filter, counter, and strategically repurpose digital information flows, rather than passively reacting to them (Dahlberg-Grundberg, 2016).

Theoretical Contributions: Renewing Controversial Politics and Organizational Resilience

This research contributes theoretically to two distinct bodies of literature. First, in the field of contentious politics, the analysis suggests that disinformation should now be conceptualized as an endogenous factor shaping mobilization dynamics, rather than simply an external disturbance. Disinformation alters opportunity structures, weakens framing processes, and generates new forms of repression that are informational rather than purely coercive. Second, in organizational studies, the findings extend resilience theory by highlighting how digital literacy and digital citizenship function as political resources. Organizational resilience is not simply a

matter of internal management or adaptive routines; rather, it is shaped by the broader socio-digital ecology that determines whether organizations can maintain legitimacy and coherence in a polarized environment. Therefore, resilience in the post-truth era must be reconceptualized as a structural and discursive achievement, requiring organizations to navigate contested truth regimes (Aspinall, 2013).

Practical Implications: Public Policy, Universities, and Civil Society Strategies

These findings also have practical implications for various stakeholders. For policymakers, the challenge lies in designing interventions that strengthen digital literacy across all social strata, thereby reducing the structural vulnerabilities that make citizens vulnerable to manipulation. National digital education programs, such as those initiated by the Indonesian government, are an important step, but they must be institutionalized in the curriculum and supported by long-term infrastructure investments. Universities also have a crucial role as epistemic communities. By embedding digital literacy and critical thinking into higher education, they serve as incubators of resilient citizens who can counter disinformation with evidence-based reasoning. Meanwhile, civil society organizations must adopt proactive strategies, including partnerships with fact-checking networks, training programs for activists, and investment in secure digital infrastructure. Collective resilience depends on a coordinated ecosystem that integrates state, academic, and civil society actors into a shared project toward democratic sustainability (Adams, 2004).

Comparative Dimension: Lessons from Indonesia for Democracy in the Global South

Finally, the Indonesian case offers comparative insights for other democracies in the Global South. Like many other developing democracies, Indonesia combines high levels of digital penetration with uneven literacy capacity and fragile institutional trust. The resulting environment amplifies both the

opportunities for mobilization and the threat of disinformation. Similar dynamics can be observed in Brazil, India, and the Philippines, where protest movements have faced digital manipulation that undermines their effectiveness. Indonesia's experience demonstrates that building resilience requires more than ad hoc responses; it demands the structural integration of digital citizenship into democratic practice. Therefore, democracies in the Global South can learn from Indonesia by prioritizing inclusive digital literacy policies, fostering cross-sector partnerships, and developing anticipatory strategies that treat disinformation as a core dimension of contentious politics. These lessons demonstrate that while the post-truth condition is global, its impact is particularly acute in developing country contexts where institutional fragility and inequality are prevalent (Akizu et al., 2017).

CONCLUSION

The analysis conducted in this study underscores the centrality of digital citizenship to organizational resilience and the sustainability of democratic practices in the post-truth era. In a context where information is contested and truth claims are constantly challenged; digital literacy emerges as a crucial political resource. Organizations that can cultivate, mobilize, and retain digitally literate constituents are better equipped to counter disinformation campaigns, maintain legitimacy, and adapt to changing opportunity structures. Conversely, structural inequalities in access to digital skills and infrastructure create vulnerabilities that weaken organizational capacity and leave communities vulnerable to manipulation. Three key insights emerge from this study. First, digital citizenship should be viewed not as an individual attribute, but as a collective capacity that strengthens organizational resilience across civil society, state institutions, and social movements. Second, resilience cannot be separated from the socio-digital environment in which organizations operate; structural gaps in connectivity and literacy fundamentally shape vulnerability. Third, educational technology and digital literacy curricula offer anticipatory

pathways to resilience by embedding long-term protections against disinformation into democratic infrastructure.

Based on these insights, several recommendations can be proposed. At the policy level, strengthening digital literacy must be a national priority. This includes not only expanding access to infrastructure but also embedding crucial digital competencies into formal education and lifelong learning. At the governance level, collaborative strategies between governments, civil society organizations, and digital platforms are crucial. States cannot regulate the information ecosystem alone, just as platforms cannot be trusted to self-regulate without democratic oversight. A multi-stakeholder approach that integrates fact-checking initiatives, transparency mechanisms, and civic education programs offers the most promising path forward. For civil society, investing in secure digital infrastructure and activist training programs is equally important, ensuring that organizational resilience is not reactive but proactive. Finally, this study suggests an agenda for future research. Comparative analyses across countries and movements are needed to deepen understanding of how digital citizenship and disinformation interact under different political regimes. Cross-national comparisons, particularly among democracies in the Global South, can highlight shared vulnerabilities and distinct resilience strategies. Similarly, cross-movement studies examining labour mobilizations, student protests, or environmental campaigns can reveal how organizational resilience manifests across different repertoires of contention. By conducting such comparative research, scholars can refine controversial political theories and organizational resilience in ways that better capture the complexities of the post-truth condition. In conclusion, digital citizenship is the foundation of organizational resilience in the post-truth era. Strengthening this capacity is not simply a technical challenge, but a democratic imperative requiring collective investment, structural reform, and continuous innovation. Only through such efforts can organizations and societies hope to survive the turbulence of disinformation and sustain democratic life in the digital age.

References

Abdulbaki, L. (2008). Democratisation in Indonesia: From Transition to Consolidation. *Asian Journal of Political Science*, *16*(2), 151–172. https://doi.org/10.1080/02185370802204099

Adams, B. (2004). Public Meetings and the Democratic Process. *Public Administration Review*, *64*(1), 43–54.

Agarwal, N., & Lim, M. (2014). *Online Collective Action Dynamics of the Crowd in Social Media* (R. T. Wigand, Ed.). Springer. http://www.springer.com/series/8768

Aguilar, O. G., Gebera, O. T., Huanca, S. C., Cruz, K. M. L., Postigo, G. P., Zavala, R. D., & Ccoya, I. O. (2024). Digital Skills and Digital Citizenship Education: An Analysis Based on Structural Equation Modeling. *Journal of Technology and Science Education*, *14*(3).

Agur, C., & Frisch, N. (2019). Digital Disobedience and the Limits of Persuasion: Social Media Activism in Hong Kong's 2014 Umbrella Movement. *Social Media and Society*, *5*(1). https://doi.org/10.1177/2056305119827002

Akizu, O., Urkidi, L., Bueno, G., Lago, R., Barcena, I., Mantxo, M., Basurko, I., & Lopez-Guede, J. M. (2017). Tracing the emerging energy transitions in the Global North and the Global South. *International Journal of Hydrogen Energy*, *42*(28), 18045–18063. https://doi.org/10.1016/j.ijhydene.2017.04.297

Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *Journal of Economic Perspectives*, *31*(2), 211–236. https://doi.org/10.1257/jep.31.2.211

Amnesty. (2024, May 2). *Global: A Web of Surveillance – Unravelling a murky network of spyware exports to Indonesia*. Www.Amnesty.Org.

Amnesty. (2025, March 13). *RUU TNI Masih Memberi Ruang Kembalinya Dwi Fungsi TNI dan Militerisme*. Www.Amnesty.Id.

Anderson, E. (2008). An Epistemic Defense of Democracy: David Estlund's Democratic Authority. *Episteme: A Journal of Social Epistemology*, *5*(1), 129–139. https://doi.org/10.1353/epi.0.0025

Anugerah, B., Junian Endiartia, J., Analis Kebijakan Pertama, M., Pengkajian Strategik, D., & dan anggota Asosiasi Analis Kebijakan Indonesia, L. R. (2018). Alumnus Magister Ketahanan Nasional Universitas Indonesia dan anggota Persatuan Alumni Gerakan Mahasiswa Nasional Indonesia. In *Jurnal Kajian Lemhannas RI | Edisi* (Vol. 34).

Anugrah, I. (2020). The Illiberal Turn in Indonesian Democracy. *Asia-Pacific Journal*, *18*(8).

Archer, A., Cawston, A., Matheson, B., & Geuskens, M. (2020). Celebrity, Democracy, and Epistemic Power. *Perspectives on Politics*, *18*(1), 27–42. https://doi.org/10.1017/S1537592719002615

Aspinall, E. (2013). Popular agency and interests in Indonesia's democratic transition and consolidation. *Indonesia*, *2013*(96 Special Issue), 101–121. https://doi.org/10.5728/indonesia.96.0011

Aspinall, E., & Fealy, G. (n.d.). *Soeharto's New Order and its Legacy: Essays in honour of Harold Crouch*.

Benford, R. D., & Snow, D. A. (2000). Framing processes and social movements: An overview and assessment. *Annual Review of Sociology*, *26*, 611–639. https://doi.org/10.1146/annurev.soc.26.1.611

Blomkamp, E., Sholikin, M. N., Nursyamsi, F., Lewis, J. M., & Toumbourou, T. (2018). *Understanding Policymaking in Indonesia: In Search of a Policy Cycle*.

Bradley, J. (1993). Methodological Issues and Practices in Qualitative Research. *Library Quarterly*, *63*(4), 431–449. http://www.journals.uchicago.edu/t-and-c

Bradshaw, S. (2020). *The Social Media Challenge for Democracy: Propaganda and Disinformation in a Platform Society*.

Brina Azhardiati, F., Windiani, R., & Wahyudi, F. E. (2023). Stabilitas Politik dan Ekonomi Uni EMirat Arab selama terjadinya Arab Spring. *Journal of International Relations*, *9*(2), 87–111. http://ejournal-s1.undip.ac.id/index.php/jihiWebsite:https://fisip.undip.ac.id/

Cho, C. S. M. (2025). Illiberal responses to “fake news” in Southeast Asia. *Democratization*, *32*(5), 1091–1111. https://doi.org/10.1080/13510347.2024.2442395

Çiçek, A. (2024). Deliberative Democracy in the Digital Age Opportunities and Challenges of Online Public Discourse. *Elektronik Cumhuriyet İletişim Dergisi*, *6*(2), 62–75. https://doi.org/10.54089/ecider.1549272

Cowen, N., Schliesser, E., & Trantidis, A. (2025). Democracy as a competitive discovery process. *European Journal of Political Economy*. https://doi.org/10.1016/j.ejpoleco.2025.102695

Cruz Crespo, Y. A., & Cruz, S. M. (2023). The role of social media activism in offline conservation attitudes and behaviors. *Computers in Human Behavior*, *147*. https://doi.org/10.1016/j.chb.2023.107858

Curato, N., & Tomacruz, S. (2025). How Conspiracy Theories Harm Deliberative Democracy. In *International Journal of Communication* (Vol. 19). http://ijoc.org.

Dahlberg-Grundberg, M. (2016). *Digital media and the transnationalization of protests*. Departement of Sociology. https://www.researchgate.net/publication/295622606

Datta, A., Jones, H., Febriany, V., Harris, D., Dewi, R. K., Wild, L., & Young, J. (2011). The political economy of policy-making in Indonesia. *Overseas Development Institute (ODI), London, UK*.

Debora, Y. (2020, October 7). *Fakta Omnibus Law UU Cipta Kerja yang Disahkan 5 Oktober*. Tirto.Id.

Earl, J., Maher, T. V, & Pan, J. (2022). The digital repression of social movements, protest, and activism: A synthetic review. In *Sci. Adv* (Vol. 8).

Esau, K. (2025). The Quality of Connections: Deliberative Reciprocity and Inclusive Listening as Antidote to Destructive Polarization Online. *Social Media and Society*, *11*(2). https://doi.org/10.1177/20563051251332421

Farooq, G. (2018). Politics of fake news: How WhatsApp became a potent propaganda tool in India. *Media Watch*, *9*(1), 106–117. https://doi.org/10.15655/mw/2018/v9i1/49279

Fattan Widodo, A. (2024). Buzzers and Digital Dissent: An Empirical Study of Online Narratives on Internet Freedom During The RUU TNI Protest. *Etika Teknologi Informasi*, *1*. https://doi.org/10.13140/RG.2.2.20734.29766

Fricker, M. (2023, September 12). *Miranda Fricker: Toward Epistemic Justice*. Www.Atd-Fourthworld.Org.

Gerbaudo, P. (2012). *Tweets and the Streets*. www.plutobooks.com.

Giugni, M., & Grasso, M. (2018). Alternative Action Organizations: Social Solidarity or Political Advocacy? *American Behavioral Scientist*, *62*(6), 778–795. https://doi.org/10.1177/0002764218768855

Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report*, *8*(4), 597–607. http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf

Heller, P., & Rao, V. (2015). *DELIBERATION AND DEVELOPMENT*.

Hui, M. (2022, July 21). *Hong Kong's protesters put AirDrop to ingenious use to breach China's Firewall*. Qz.Com.

Hutchings, S. C. (2025). Uncovering the uncoverers: identity, performativity and representation in counter-disinformation discourse. *Cultural Studies*, *39*(4), 546–573. https://doi.org/10.1080/09502386.2024.2384942

indonesia.go.id. (2019, December 4). *Omnibus Law: Solusi dan Terobosan Hukum*. Indonesia.Go.Id.

Jæger, B. (2021). Digital Citizenship – A Review of the Academic Literature. *Der Moderne Staat – Zeitschrift Für Public Policy, Recht Und Management*, *14*(1–2021), 24–42. https://doi.org/10.3224/dms.v14i1.09

Karanfiloğlu, M., & Sağlam, M. (2023). *Empowering Citizens Through Media Literacy: Countering Disinformation on Social Media*. https://www.researchgate.net/publication/377438817

Kementerian Pendidikan & Kebudayaan dan KPK. (2012). *Panduan Penyelenggaraan Pendidikan Anti Korupsi Di Satuan Pendidikan*. Kementerian Pendidikan & Kebudayaan dan KPK.

Kemp, S. (2023, February 9). *Digital 2023: Indonesia*. Datareportal.Com.

Khan, H., Ozkan, K. S. L., Deligonul, S., & Cavusgil, E. (2024). Redefining the organizational resilience construct using a frame based methodology: A new perspective from the ecology based approach. *Journal of Business Research*, *172*. https://doi.org/10.1016/j.jbusres.2023.114397

Kim, L. (2023). The Echo chamber-driven Polarization on Social Media. *Journal of Student Research*, *12*(4). www.JSR.org

kominfo.go.id. (2021). *Kementerian Komunikasi dan Informatika*. Kominfo.Go.Id. https://www.kominfo.go.id/content/detail/37730/pemerintah-waspadai-varian-baru-corona-ay42-dari-inggris/0/berita

kompas.com. (2021, November 18). *KPK Tetapkan Bupati Hulu Sungai Utara Abdul Wahid Tersangka*. Kompas.Com. https://nasional.kompas.com/read/2021/11/18/18010041/kpk-tetapkan-bupati-hulu-sungai-utara-abdul-wahid-tersangka?page=all

Kuyper, J. W. (2012). Deliberative Democracy and the Neglected Dimension of Leadership. In *Journal of Public Deliberation* (Vol. 8).

Lacity, M. C., & Janson, M. A. (1994). Understanding qualitative data: A framework of text analysis methods. *Journal of Management Information Systems*, *11*(2), 137–155. https://doi.org/10.1080/07421222.1994.11518043

Lawelai, H., Sadat, A., & Suherman, A. (2022). Demokrasi dan Kebebasan Berpendapat di Media Sosial: Analisis Sentimen di Twitter. *Praja*, *10*(1), 40–48.

Lewandowsky, S., Ecker, U. K. H., Cook, J., van der Linden, S., Roozenbeek, J., & Oreskes, N. (2023). Misinformation and the epistemic integrity of democracy. In *Current Opinion in Psychology* (Vol. 54). Elsevier B.V. https://doi.org/10.1016/j.copsyc.2023.101711

MAFINDO. (2024, February 2). *Siaran Pers Mafindo: Hoaks Politik Meningkat Tajam Jelang Pemilu 2024, Ganggu Demokrasi Indonesia*. Mafindo.or.Id.

Mah, H. (2000). Phantasies of the public sphere: Rethinking the Habermas of historians. *Journal of Modern History*, *72*(1), 153–182. https://doi.org/10.1086/315932

Malinda, R. (2025). Dispossession, Extractive Capitalism and Political Reactions From Below in West Papua. *Journal of Agrarian Change*. https://doi.org/10.1111/joac.70032

Matteo Spini, B., Stefanizzi, S., & Tosi, S. (2023). *"We are the resistance" Fridays for Future Italy and the fight for climate justice*. University of Milan-Bicocca.

Mauk, M., & Grömping, M. (2024). Online Disinformation Predicts Inaccurate Beliefs About Election Fairness Among Both Winners and Losers. *Comparative Political Studies*, *57*(6), 965–998. https://doi.org/10.1177/00104140231193008

McCoy, H. (2020). Black Lives Matter, and Yes, You are Racist: The Parallelism of the Twentieth and Twenty-First Centuries. *Child and Adolescent Social Work Journal*, *37*(5), 463–475. https://doi.org/10.1007/s10560-020-00690-4

Miles, Matthew B, Huberman, A. M. (1994). Qualitative Data Analysis. In *Sage Publications*.

Muhammad, G. A. (2024). *Examining the Significance of Disinformation to Indonesia's Democracy*. https://www.researchgate.net/publication/382446285

Muliawati, A. (2025, February 10). *KPU: Partisipasi Pemilu 2024 82%, Lebih Tinggi Dibanding Banyak Negara Lain*. News.Detik.Com.

Nugroho, A. C. (2015). REPRESENTASI POLITY DAN TRIVIA DALAM AGENDA MEDIA (Studi Agenda Media SK Ibukota). *Jurnal Studi Komunikasi Dan Media*, *19*(1), 63–72.

Nugroho, K. (2011). Ikhtiar Teoritik Mengkaji Peran Partai dalam Mobilisasi Politik Elektoral. *Departemen Politik Universitas Airlangga*, *24*(3), 202–214.

Nurfebriansyah, A. R., Rahmatunnisa, M., Immanuel, G. K., Suramahardini, K. M., & Yamani, M. L. T. (2025). Challenges of Indonesian Democracy Post-2024 Election. *Jurnal Trias Politika*, *9*(1), 138–152. https://doi.org/10.33373/jtp.v9i1.7531

Oberschall, A. (1973). *Social Conflict and Social Movements*. Prentice-Hall, Inc, Yale University.

Piksa, M., Noworyta, K., Gundersen, A., Kunst, J., Morzy, M., Piasecki, J., & Rygula, R. (2024). The impact of confirmation bias awareness on mitigating susceptibility to misinformation. *Frontiers in Public Health*, *12*. https://doi.org/10.3389/fpubh.2024.1414864

Pimay, A., & Riyadi, A. (2019). Anti-Hoaxes Social Movement of the Indonesian Anti-Defamation Society. *The Seybold Report*, *17*(108), 1537–1552. https://doi.org/10.5281/zenodo.7018493

Power, T. P. (2018). Jokowi's authoritarian turn and Indonesia's democratic decline. *Bulletin of Indonesian Economic Studies*, *54*(3), 307–338. https://doi.org/10.1080/00074918.2018.1549918

Prabowo, A., & Arofah, K. (2017). Media Sosial Instagram sebagai Sarana Sosialisasi Kebijakan Penyiaran Digital. *Jurnal ASPIKOM*, *3*(2), 256–269. http://www.jurnalaspikom.org/index.php/aspikom/article/view/132

Ramadlan, M. F. S., & Aminuddin, M. F. (2025). Student Activism in Post-Authoritarian Indonesia: Higher Education Reform, Movement Dynamics, And Shifting Political Narratives. *JWP (Jurnal Wacana Politik)*, *10*(3), 313–327. https://doi.org/10.24198/jwp.v10i3.51485

Ressmy, S., Ningrat, C., & Nulhaqim, S. A. (2023). Pasal Karet UU ITE dan Peyelesaian Konflik Digital di Indonesia. In *Indonesian Journal of Social and Political Sciences* (Vol. 4, Issue 2).

Rosyada, A., & Aisyah, V. N. (2022). *Television Coverage: Between Social Movement and Violence*.

Ruijgrok, K. (2017). From the web to the streets: internet and protests under authoritarian regimes. *Democratization*, *24*(3), 498–520. https://doi.org/10.1080/13510347.2016.1223630

Salleh, A. S. S., Latif, A., Anis, W., Zambri, A. M., Latiff, D. I. A., & Kamal, S. (2023). Media Literacy and Digital Citizenship in the Era of Social Media. *International Journal of Academic Research in Business and Social Sciences*, *13*(11). https://doi.org/10.6007/ijarbss/v13-i11/19392

Schäfer, S., & Syam, M. (2024). Pandemic politics: The acceleration of democratic erosion and autocratization in Indonesia during Covid-19. *Zeitschrift Fur Vergleichende Politikwissenschaft*, *18*(4), 475–503. https://doi.org/10.1007/s12286-025-00634-1

secdev-foundation.org. (2025, July 9). *Digital Repression and Resistance in Myanmar: Fresh Insight*. Secdev-Foundation.Org.

Shin, D., & Shin, E. Y. (2025). Cascading falsehoods: mapping the diffusion of misinformation in algorithmic environments. In *AI and Society*. Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/s00146-025-02575-5

Sihombing, B. F., & Hamid, A. (2020). Impact of the Omnibus Law/Job Creation Act in Indonesia. *International Journal of Scientific Research and Management*, *8*(`10), 266–281. https://doi.org/10.18535/ijsrm/v8i10.lla01

Simmons, E. (2014). Grievances do matter in mobilization. *Theory and Society*, *43*(5), 513–546. https://doi.org/10.1007/s11186-014-9231-6

Simsek, E., Forces, T. A., & Simsek, A. (2013). New Literacies for Digital Citizenship. In *Contemporary Educational Technology* (Vol. 4, Issue 2).

Sonni, A. F. (2025). AI-based disinformation and hate speech amplification: analysis of Indonesia's digital media ecosystem. *Frontiers in Communication*, *10*. https://doi.org/10.3389/fcomm.2025.1603534

Suryo, H., & Aji, H. K. (2019). Media Sosial dan Pesan Politik (Persepsi Pemilih Pemula dalam Menerima Pesan Politik pada Pemilihan Umum 2019 melalui Media Sosial). *Research Fair Unisri*, *4*(1), 87–94. https://doi.org/10.33061/RSFU.V4I1.3390

Syaf, E. J. (2017). Symbol Connection Of Ethnic Identity As Political Communication In Election, Makassar City. *Jurnal Komunikasi KAREBA*, *6*(2), 215–224.

Syahputra, I. (2017). Demokrasi Virtual Dan Perang Siber Di Media Sosial: Perspektif Netizen Indonesia. *Jurnal ASPIKOM*, *3*(3), 457–475. https://doi.org/10.24329/ASPIKOM.V3I3.141

Tarrow, S. (2008). Charles Tilly and the Practice of Contentious Politics. *Social Movement Studies*, *7*(3), 225–246. https://doi.org/10.1080/14742830802485601

tempo.co. (2016). *Survei Polmark: Elektabilitas Ahok Terus Anjlok - Metro Tempo.co*. https://metro.tempo.co/read/809889/survei-polmark-elektabilitas-ahok-terus-anjlok

Tengblad, S., & Oudhuis, M. (2020). *A Theoretical Framework for Organizational Resilience*. https://www.researchgate.net/publication/340417738

Ulum, M. B. (2020). Indonesian Democracy and Political Parties After Twenty Years of Reformation: A Contextual Analysis. *Indonesia Law Review*, *10*(1), 29–44. https://doi.org/10.15742/ilrev.v10n1.577

Umar, J. (2020). Maluku Utara Dalam Relasi Historis. *Jurnal Pusaka*, *1*(1), 10–21.

Vasist, P. N., Chatterjee, D., & Krishnan, S. (2024). The Polarizing Impact of Political Disinformation and Hate Speech: A Cross-country Configural Narrative. *Information Systems Frontiers*, *26*(2), 663–688. https://doi.org/10.1007/s10796-023-10390-w

Vrieze, P. (2024). Movement escalation and mobilization for resistance: From anti-coup protest to 'People's War' in Myanmar. *Political Geography*, *114*. https://doi.org/10.1016/j.polgeo.2024.103165

Wada, T., Koo, Y., & Aoki, Y. (2024). Convention, Protest, or Violence? Estimating the Influence of Repertoires of Contention over Tactical Choice. *Società Mutamento Politica*, *15*(29), 13–36. https://doi.org/10.36253/smp-15495

Webster, J. (2025). Defining digital citizenship and digital citizenship education: a Delphi study. *Journal of Research on Technology in Education*. https://doi.org/10.1080/15391523.2025.2536564

Wilding, D., Fray, P., Molitorisz, S., & Mckewon, E. (2018). *Centre for Media Transition*. NSW.

Yom, S. (2015). The Arab Spring: One Region, Several Puzzles, and Many Explanations. *Government and Opposition*, *50*(4), 682–704. https://doi.org/10.1017/gov.2015.19

CHAPTER V

PRODUCTION MANAGEMENT FROM THE PERSPECTIVE OF DIGITAL TRANSFORMATION, SUSTAINABILITY, AND ORGANIZATIONAL BEHAVIOR: PROCESS OPTIMIZATION IN A CONSTRUCTION MACHINERY MANUFACTURING PLANT

Hacı SARI[1]

Pınar ŞİPKA[2]

1 Dr. Baskent University, dr.hacisari@gmail.com, 0000-0003-1114-2808
2 pinarsipka@gmail.com, 0009-0006-9239-8897

INTRODUCTION

In today's world, digital transformation holds undeniable importance. Business actors are compelled to reflect the pace of technological advancements across all their operations from marketing to production, from human resources to customer relations in order to maintain their competitive edge. This rapid progress also brings forth new ways of doing business in a wide variety of fields. Change is not limited to technological infrastructure alone; it equally demands new leadership approaches, strategic plans, and organizational culture. For companies to sustain their existence and achieve lasting competitive advantage, they must strategically manage digitalization which, under the influence of globalization and the knowledge economy, is no longer optional but a necessity by turning creative ideas into innovations that generate economic and social value. From a historical perspective, industrial revolutions have been processes that elevated production to the next level by carrying forward the innovations introduced by their predecessors. With Industry 1.0, the shift was from manual labor to machine power; with Industry 2.0, from electricity and assembly lines to mass production; with Industry 3.0, from mechanical and electronic technologies to digital technologies in manufacturing. Industry 4.0, in turn, has introduced the integration of technologies such as IIoT, cloud computing, digital twins, augmented reality, and robotics, giving rise to the notion of smart factories. Through all these developments, businesses have simultaneously gained the

ability to make their processes more flexible, faster, and customer-oriented, while also achieving cost and energy savings, enhancing quality, and advancing environmentally sustainable production. Dijitalleşme ve çevresel sürdürülebilirlik, insanların ve makinelerin birlikte daha etkili bir şekilde çalışmasını amaçlayan, kuantum tabanlı, yüksek hassasiyetli üretim sistemleri olarak kurgulanan geleceğin endüstriyel devrimlerinin de temel taşlarını oluşturmaktadır. Digitalization and environmental sustainability constitute the cornerstone of future industrial revolutions, envisioned as quantum-based, high-precision manufacturing systems designed to enable humans and machines to work together more effectively. The success of digital transformation requires not only the establishment of technological infrastructure but also the restructuring of organizational culture to adapt to this transformation. The reflections of this revolution in the business environment are evident in changing customer expectations, improvements in product quality, the pursuit of collaborative innovation, and the emergence of innovations within organizational structures (Xu, David, & Kim, 2018). Recent academic studies emphasize that digital transformation is a matter of strategic governance, highlighting the necessity for companies to manage this process based on vision, leadership, and cultural values (Matt, Hess, & Benlian, 2015). Success in digital transformation allows companies to make accurate and rapid decisions through the establishment of knowledge-based standards supported by technology (Apilioğulları, 2019). When addressing digital

transformation, a multilayered approach should be adopted that should built upon a well-structured technological infrastructure suitable for businesses, supported by sustainability principles, organizational learning, and strategic management capabilities.

Digital Transformation Strategies

For a successful digital transformation within businesses, it is essential that top management possesses sufficient knowledge and ensures holistic governance in areas such as leadership, digital vision, employee competencies, and organizational culture. Strategic management in enterprises aims to achieve corporate success by enabling the coordinated functioning of different departments in an enterprise (Kumru & Kasimoğlu, 2022). In order to design an effective digital transformation strategy, it is necessary to clearly identify the interactions between the factors driving the process and the relationships these factors establish with the areas of transformation (Klein, 2020).

Technology Utilization Strategy

A core component of the technology utilization strategy in the digital transformation process is the identification of technologies that align with the intended objectives. Within this framework, the strategy outlines how technologies such as the Internet of Things (IoT), big data analytics, artificial intelligence, blockchain, augmented reality, and digital twins will be integrated into the business's processes. The use of technology should not be

driven merely by current trends or external obligations; rather, it should be structured to serve the organization's fundamental goals and remain consistent with its overall strategy. Furthermore, the company's position within its own ecosystem and its alignment with other actors are of equal importance. Efficiency gains achievable through digital transformation and data cannot be fully realized as long as misalignments within the ecosystem persist (Perrin & Sömermaa, 2021). Another critical dimension involves accounting for the environmental impacts of technology. Technology is widely regarded as one of the key determinants of how human activities affect the environment (Bianchini, Damioli, & Ghisetti, 2022). Technological configurations vary across industries. For a business to succeed in its digital transformation journey, it must accurately assess its level of preparedness, take into account the diversity of the markets in which it operates, and closely monitor potential threats from emerging digital competitors in order to develop appropriate strategies (Danuso, Giones, & Ribeiro da Silva, 2022).

Transformation in Value Creation

One of the most critical elements of digital transformation strategies is the redefinition of the value delivered to customers and other stakeholders within the ecosystem. Businesses seeking to achieve successful digital transformation must analyze customer behavior using accurate data, derive actionable insights, and employ digital technologies proactively to enhance the customer experience, shifting from a cost-oriented approach to a value-driven structure (Kumru & Kasımoğlu, 2022).

Among the components of value creation, data stands out as the most crucial. Meaningful data collected from customers, suppliers, subcontractors, and processes should be processed through analytical methods and transformed into decision-support systems that inform strategy. It has been concluded that while digitalization transforms the relationships, positions, and strategies of actors in the soil cultivation ecosystem and increases the need for data-driven collaboration, value creation cannot be fully realized due to misalignments, uncertainties over data ownership, and limited sharing, making the release of data and collective action critical for achieving competitive advantage. (Perrin & Sömermaa, 2021). Data-driven business models not only contribute positively to reducing production costs but also enhance customer satisfaction and loyalty. The advancement of digital technologies raises customer expectations, requiring businesses to not only meet current demands but also anticipate future needs and prioritize customer experience (Kumru & Kasımoğlu, 2022).

Structural Change and Organizational Behavior

When digital transformation is pursued within an integrated structural change, the success of the strategy also requires the organizational structure to adapt accordingly. As digital transformation reshapes business practices and organizational structures, it becomes critical for companies to ensure active employee participation in the process and to identify the most suitable methods for developing their digital competencies (Kumru

& Kasımoğlu, 2022). Over time, existing hierarchical and rigid organizational structures must give way to more flexible, agile, and horizontal forms. Through human resource management strategies, employee adaptation to digitalization and technological advancement should be supported by continuous training, while new recruitment criteria should account for candidates' digital competencies. Organizational performance must be aligned with the digital transformation process by introducing planning initiatives such as incentive systems that enhance employees' technological skills and motivation, foster creativity, and performance evaluations based on analytical data. Involving employees in decision-support processes, strengthening cross-team collaboration, and ensuring transparent communication establish a foundation conducive to digital transformation. In digital HRM, the adoption of advanced technologies across all areas from recruitment and training to strategic planning requires adaptation not only from HR units but also from employees. To prevent technostress, it is recommended to use surveys measuring the technological readiness of Generation X and Y, coupled with regular training and development programs. Such measures are expected to enhance employee adaptation, productivity, and performance (Kırmızısaç, 2021). During the change process, employees may resist transformation due to various individual, sociological, psychological, economic, and organizational reasons. Diken, Karadağ, and Diken (2024, p. 134) emphasize that resistance to change often stems from employees' fears of uncertainty, loss of benefits, increased workload, and

abandoning established habits. However, they argue that with adequate training and organizational support, resistance can be mitigated, enabling processes such as digital transformation to be managed in a planned, coherent, and holistic manner thereby achieving success more swiftly and smoothly. In short, structural change in digital transformation should be conceived as a process not only aimed at enhancing efficiency through the redesign and automation of business processes with digital technologies but also at reducing employees' potential resistance by redirecting them toward strategic and creative tasks, while transforming organizational culture into one that is innovative, collaborative, and open to learning.

Financial Strategy

Digital transformation investments, by their very nature, entail high costs. This necessitates businesses to make strategically sound financial decisions. Short-term costs and long-term benefits must be carefully evaluated in a balanced manner, based on thorough planning and cost-benefit analyses. In financial strategy, proper budget planning for digital transformation projects is of critical importance. Insufficient financing can lead to project failures, while excessive investment may cause resource shortages in other strategic areas of the business. However, financial impact is not limited to investment costs alone; it can evolve positively through balanced and sustainable financial planning, alongside exploring new revenue streams and efficiency gains enabled by digitalization.

For SMEs, despite limited capital and digitalization barriers, leveraging digital technologies, employee digital competencies, and strategic transformation plans emerges as the key factor that directly affects their financial performance (Teng, Wu, & Yang, 2022). Approaches to digital transformation can be summarized as: **explosive** covering the entire organization rapidly and intensively; **distributed** adopting a gradual and flexible transition that allows business units to proceed at different speeds; and **reactive** pursuing limited digitalization while preserving existing priorities (Danuso, Giones, & Ribeiro da Silva, 2022). Financial strategy should be planned in alignment with whichever of these approaches managers adopt.

Governance, Responsibilities, and Organizational Dynamics

In the digitalization process, businesses must consider different concepts, conduct the necessary analyses, and develop strategies that align with all business processes and future planning (Tutkunca, 2020). During the implementation of these strategies, it is essential to clearly define the roles of all stakeholders from top management to employees, to ensure collaboration in decision-making processes, to evaluate risks, and to align goals. During the transition to a digital culture, management must provide support and motivation for digital initiatives, encourage employees to explore digital tools, provide digital training, engage staff, lead by example, and emphasize usability and reliability when designing new services

(Nalbantoğlu, 2021). Clear and consistent information flow should be maintained among employees and stakeholders; cross-departmental collaborations should be fostered; and an innovative, learning-oriented culture capable of adapting quickly to new technologies should be established. Additionally, issues such as data ownership, access rights, security policies, and stakeholder relationships hold critical importance in defining roles and responsibilities. Unclear responsibilities can hinder cooperation both within the company and with external stakeholders, potentially creating reluctance in data sharing and disrupting the transformation process.

Strategic Alignment

The success of a digital transformation strategy can be measured by its level of alignment with the overall strategy of the business. Strategic alignment can be said to exist if digital investments are integrated with the organization's vision, mission, and long-term goals. For example, a business aiming to improve customer experience will focus on data analytics, advanced customer relationship management systems, and personalized services, while a sustainability oriented company will prioritize systems measuring environmental performance and implementing green supply chain practices. For digital transformation to be lasting and sustainable, businesses must develop strategies aligned with organizational objectives, determine their digital priorities, and establish roadmaps accordingly (Telli, 2022). Strategic alignment is also linked to organizational learning

capacity. Companies must incorporate experiences gained during the digital transformation process into their strategic plans to ensure continuous improvement. This perspective helps frame digital transformation not as a temporary project but as an ongoing journey. In summary, digital transformation strategies require an approach that integrates technological investments, organizational culture, financial planning, and governance bringing together technology utilization and value creation processes, addressing structural change and organizational behavior, and ensuring alignment with the overall strategy, all grounded in solid financial foundations and clear governance mechanisms.

Digitalization and Sustainability in Production Management

In today's businesses, digitalization provides efficiency, flexibility, and competitive advantage through technologies such as big data, artificial intelligence, and enterprise resource planning systems; sustainability, on the other hand, complements this transformation by addressing environmental, economic, and social responsibility dimensions together forming mutually reinforcing dynamics within production management. The concepts of digitalization and sustainability are increasingly intertwined, generating transformation dynamics that feed into one another within production systems. While digitalization shapes the new production paradigm and creates significant impacts on businesses,

the depletion of natural resources, environmental challenges, and global inequalities make it imperative to incorporate environmental and social sustainability alongside profit-driven production. For this reason, digitalization and sustainability should be seen as complementary structures and integrated into the strategically prioritized approach of sustainable production (Özen, Soyuer, & Kazançoğlu, 2025).

The Role of Digitalization in Production Management

With digital transformation, automation and robotic applications have been introduced, even leading to the establishment of dark factories capable of operating without human intervention. However, digitalization has gone beyond automation by transforming production management through flexibility, speed, and customer orientation. With the aid of emerging technologies such as IoT, artificial intelligence, and big data, it has enabled easy access to real-time information from anywhere, allowing managers to make faster and more accurate decisions instead of relying solely on historical data. This, in turn, has optimized resource utilization and strengthened businesses' competitive advantage. With Industry 4.0, production lines have gained greater flexibility, speed, and efficiency, delivering numerous benefits in critical areas such as production planning, inventory management, supply chain management, production control mechanisms, occupational health and safety, and environmental health and safety systems.

Industry 5.0, on the other hand, is envisioned as a new paradigm built on human–machine collaboration, aiming to highlight human creativity and skills, add value to production processes, and promote a sustainability- and human-centered production approach (Çat & Güngör, 2023).

The Sustainability Dimension

The integration of digitalization into production management has also contributed to the achievement of sustainability goals. Thanks to IoT-based sensors, energy consumption and resource use in production processes can now be monitored in real time, helping to prevent waste. For instance, in energy-intensive sectors, smart meters and digital control systems not only support the minimization of carbon emissions during production but also highlight the potential risk that, without proper planning, unnecessary investments may produce adverse effects. The sustainability dimension also encompasses social impacts. Through digitalization, workplace safety is enhanced, employee exposure to hazardous tasks is reduced, and healthier working environments are created. This strengthens sustainability not only in environmental terms but also in its social dimension. n a global scale, organizations are able to maintain their competitive advantage to the extent that they leverage digital capabilities to contribute to sustainability. Clean technologies and green innovation practices, meanwhile, emerge at the intersection of digital transformation and sustainability not only as

a necessity brought about by international integrations but also as a natural consequence of isomorphic effects (Akdemir Ömür, 2025).

An Integrated Approach: Digital + Sustainable

In recent years, the approach referred to in the literature as the "twin transition" highlights the joint consideration of digitalization and sustainability. This perspective envisions the use of digital technologies as strategic tools to achieve sustainability goals. Recognizing the potential negative consequences that may arise when digital transformation is not integrated with green transition, it is important that policy frameworks supporting the "twin" transition be shaped in light of these findings (Bianchini, Damioli, & Ghisetti, 2022). The twin transition particularly supports sustainability policies in energy, logistics, and manufacturing by leveraging the data flow and optimization power of digital technologies, enabling processes in smart factories to be designed with both cost and environmental impacts in mind. As previously discussed under digital transformation strategies, the concept of continuous training is essential. Similarly, for sustainability and the green transition, a human-centered approach is required. Placing humans at the core of the twin transition makes it imperative to update educational curricula so that they address not only digital transformation but also the dimension of sustainability (Deniz & Büyük, 2023).

Application Areas and Sectoral Examples

The contributions of digitalization to production management and sustainability are evident across different sectors through various examples. In the automotive industry, for instance, digital twins and AI-based simulations help minimize production failures, improve energy efficiency, and reduce carbon emissions. In the construction sector, building information modeling (BIM) systems and augmented reality applications are employed to reduce material waste and foster the development of more environmentally friendly construction processes. In the energy sector, smart grids and IoT-based monitoring systems reduce losses in energy generation and distribution while facilitating the integration of renewable energy sources. In the defense industry, digitalization has played a critical role in advancing precision manufacturing technologies. Sensor-based data collection and digital twin technologies are used in the lifecycle management of defense equipment, providing both cost advantages and support for sustainability. These examples reveal that digitalization is not merely a technological advancement but also offers strategic contributions to businesses within the context of sustainable production and environmental responsibility. In Turkey and around the world, it has become clear that overcoming the productivity and investment challenges of the industrial sector requires digital transformation. This transformation must be implemented with coordinated contributions from the state, universities, industry, companies, and individuals, supported by strong

infrastructure, financing, motivation, and a skilled workforce, in order to achieve productivity, growth, employment, and competitive advantage (Sağbaş & Gülseren, 2019)At the same time, green transformation must be addressed alongside digital transformation. To maintain competitiveness in the global market, it is essential that sector-specific developments be closely monitored, and a planned, sustainable, and integrated transformation approach be adopted across all industries.

Process Optimization and Sustainable Operational Efficiency

Another contribution of digital transformation is the achievement of sustainable operational efficiency through the optimization of business processes. It is one of the criteria considered when assessing the digital maturity level of enterprises is their processes. Digital maturity reflects the degree of interaction and integration between operations and human capital through digital processes (Asiltürk, 2021. During digital transformation, the digitalization of processes should be designed to remain flexible and compatible with one another without disrupting existing functionality. All stakeholders must collaborate, align around common goals, and structure the organization accordingly. Process optimization supported by digital technologies not only enhances operational efficiency but also contributes to fulfilling environmental and social responsibilities.

The Concept of Process Optimization

Process optimization can be defined as a systematic approach that aims to ensure quality, efficiency, flexibility, and sustainability in production and management activities with minimal cost and resource usage. While traditional methods relied on manual observation and historical data for process improvement, with digital transformation, technologies such as big data, artificial intelligence, and IoT have enabled a more analytical, real-time, and proactive approach to process optimization. Through real-time data collection, critical insights such as identifying bottlenecks, detecting underperforming machines, monitoring energy consumption, and measuring scrap rates feed into decision-support processes. This paves the way for moving from process improvements in production, maintenance, supply, and quality control toward an ideal scenario of comprehensive process optimization. Process optimization supported by secure and up-to-date technologies that align with strategic goals enhances customer trust and loyalty, reduces failures and processing time, and provides businesses with efficiency and profitability. At the same time, it supports sustainable growth and offers competitive advantage in global markets through predictable, agile, and customer-oriented structures (Şahinaslan, 2023).

Sustainable Operational Efficiency

One of the most important dimensions of process optimization today is sustainable operational efficiency. In terms of operational efficiency, businesses aim to expand their product

portfolios while preserving quality and using their inventories effectively. To gain competitive advantage, they are shifting from traditional methods to modern production systems and, through automation supported by smart machines, seek to minimize downtime, speed losses, and quality deficiencies—thereby improving equipment reliability and production efficiency (Öztürk Yılmaz & Yıldız, 2019). Sustainable operational efficiency, however, goes beyond economic performance by also taking environmental and social impacts into account. Within the scope of process optimization, businesses address objectives such as reducing energy consumption, minimizing waste, reintegrating materials into the production process through circular economy approaches, lowering carbon emissions, and creating safer working environments. Sustainable operational efficiency is also a concept that strengthens corporate reputation. Today, sustainability and environmental performance measurement reports have become important decision-making criteria for both investors and customers. To enhance profitability, companies must prioritize transparent disclosure of their environmental initiatives, thereby reinforcing their corporate reputation (Ayvaz & Awale, 2024).

Integrated Process Optimization with Digital Transformation

Digital transformation and process optimization, as two complementary strategic elements, enhance the long-term competitiveness of businesses. Through digitalization, processes can be monitored in real time, performance metrics can

be evaluated in detail using big data analytics, and operational decisions can be automated with the help of artificial intelligence algorithms. With the support of IoT technologies, the application of digital twins in product development and process improvement has been expanding across various industries (Kumaş & Erol, 2021). Moreover, technologies such as augmented reality (AR) and robotic automation facilitate employees' workflows, reduce failure rates, and enhance operational safety. The integration of these technologies strengthens not only the economic but also the human and environmental dimensions of process optimization. In conclusion, digitalization emerges not merely as a tool for process optimization but as a strategic mechanism for value creation.

Application: Process Optimization in Construction Machinery Manufacturing Plants

Production processes in construction machinery factories require large-scale investments, skilled labor, and high precision. With digital transformation, enterprise resource planning (ERP) systems can be tailored to business processes for managing procurement, inventory, logistics, maintenance, and financial operations; manufacturing execution systems (MES) can enable digital integration of production planning, work orders, routes, and processes; IoT sensors can collect real-time data from CNC machines, welding robots, assembly, and painting lines; and information technology centers or cloud solutions can ensure secure

storage and accessibility of data together strengthening transparency, traceability, and data-driven proactive decision-making capabilities. In production technologies, digital twin applications allow the creation of virtual replicas of machines and/or products, enabling the simulation of production processes in digital environments, thereby predicting possible failures in advance and implementing preventive measures against potential risks. With the adoption of robotics and automation systems, efficiency can be improved, and cycle times shortened. Alongside minimizing human error in critical processes, high-precision measurement, assembly, and machining capabilities contribute to maintaining consistent quality standards. Reduced defect costs and minimized raw material waste lead to cost optimization and competitive advantage. Through real-time data analysis, machine downtimes and their causes can be identified, enabling predictive maintenance to reduce stoppages. In hazardous and health-threatening areas, automation systems can replace human intervention, preventing workplace accidents. Repetitive and non-ergonomic tasks can be reduced with automation, while programmed flexibility allows for the production of different product types. From a sustainability perspective, measuring and optimizing energy consumption and carbon footprint becomes possible. For after-sales services, digital training platforms can be established to provide operators, customers, authorized services, and dealers with learning opportunities through AR/VR technologies in virtual environments. Additionally, sensor data from machines in customer use can be monitored, enabling remote fault detection, maintenance tracking,

spare part management, and data collection for product development. Also a digital human resource management system can be used to prevent employee resistance by involving them in the processes, and providing training, incentives, and development programs that foster motivation and adaptation ultimately shaping a culture of organizational change. In procurement processes, digitalization and green transformation perspectives can be combined through digital ordering and blockchain-based traceable logistics operations. All these capabilities enable process optimization in construction machinery factories across dimensions of efficiency, quality, continuity, supply chain, human resources, and sustainability. This not only enhances competitiveness and the value delivered to customers but also lays a solid foundation for long-term sustainable growth. However, the most critical factor is ensuring that digital and green transformation strategies are selected to fit the business, with clearly defined roles and responsibilities, progress aligned with financial planning, and a collaborative, continuously improving approach. Starting with pilot areas and gradually expanding implementation across the enterprise can provide greater security in terms of investment costs and returns. Clearly defining existing processes and preventing the transmission of current deficiencies during the transformation are crucial to avoid larger issues both within the organization and across the stakeholder ecosystem.

The Impact of Digital Transformation on Production, Environmental Performance, and Organizational Behavior

Digital transformation is not merely a technological change but a comprehensive transformation that must be addressed from a multi-perspective, holistic approach requiring knowledge, collaboration, and continuous improvement. While Industry 4.0 technologies provide speed and real-time data in production, it is equally essential to measure and optimize environmental impacts, adapt organizational culture, and strengthen human–machine collaboration.

The Impact on Production Performance

With digital transformation, production performance can be enhanced by aligning with strategic objectives, following financial planning, utilizing technological opportunities at the right points and scale, and adopting a customer-oriented production approach. In particular, IoT technologies and automation systems reduce failure margins while enabling fast and flexible production capabilities. Artificial intelligence, through database analyses, not only enhances business performance but also provides advanced analytical tools to improve product quality (Saray, 2024). Efficient use of resources, improvements in quality, and reductions in scrap rates such as those outlined under the process optimization section above represent key contributions of digital transformation that positively influence production performance. The data collected during process

optimization allows for the continuous analysis of process performance metrics. As noted: “A well-executed process optimization strategy improves a company’s performance while also contributing to the realization of sustainable growth” (Şahinaslan, 2023, p. 596).

The Impact on Environmental Performance

The effects of digital transformation on environmental performance are of critical importance for businesses’ sustainability strategies. “The sustainable production approach, which has expanded in scope alongside changes in environmental and social dynamics, must preserve its core principles while also integrating concepts that have emerged in the context of the new industrial revolution brought about by digitalization, and align itself with this transformation” (Özen et al., 2025, p. 82). Businesses must prioritize minimizing environmental and social harm not merely focusing on costs and short-term considerations, but also safeguarding their long-term corporate reputation and competitiveness, while meeting customer expectations and environmental regulatory requirements. To this end, the first step is to establish a sustainability policy that is monitored under an integrated management system. Leveraging Industry 4.0 capabilities, companies should measure and analyze energy and water consumption as well as their carbon footprint in production, logistics, and supply chain processes, and adopt mitigation measures accordingly. They must also select suppliers in their ecosystem according to the same criteria and, where possible,

encourage them to adopt transformation practices. Employees should be trained and provided with development opportunities in this regard. New product innovations should incorporate environmental and social benefit criteria, with related R&D investments and patent applications included in performance evaluations. In this way, businesses can turn technological opportunities into performance improvements while sustaining their competitive position in the ever-evolving global market. While digital technologies such as additive manufacturing (3D printing), artificial intelligence, robotics, and automation increase energy consumption, they must be supported by green technologies to minimize environmental impacts. Researchers emphasize that digital technologies, due to their high energy demands and waste disposal requirements, can directly increase emissions; however, they also note that different digital technologies have varying environmental impacts, and that the interactive use of environmental and digital technologies contributes positively to emission reduction (Bianchini et al., 2022). In the future, non-financial performance for businesses will also be assessed through sustainability balance sheets. Yet, due to the long-term nature of corporate sustainability, this will be complex, and only as consensus on indicators is achieved over time will it become institutionalized (Montiel & Delgado-Ceballos, 2014). For these reasons, it is essential that businesses integrate their digitalization processes with sustainability strategies.

The Impact on Organizational Behavior

Digital transformation not only improves production and environmental performance but also has significant effects on organizational behavior, leading organizations to evolve from hierarchical structures toward more flexible and agile forms. With technological advancements, transparency and data orientation in decision-making processes increase, while employee participation is strengthened. In businesses' digital transformation strategies, it is essential to ensure employees' active involvement in the process, provide competency development programs, and implement effective change management practices.

Holistic Evaluation

Digital transformation has become a strategic necessity for businesses due to its impacts on production efficiency, environmental sustainability, and organizational culture. Success in this process depends on implementing technological investments in alignment with strategic plans, integrating them with sustainability goals, and adapting organizational culture to the transformation. nly by managing these elements holistically can businesses achieve long-term competitive advantage.

Challenges, Organizational Resistance, and Sustainable Solution Proposals

While digital transformation processes offer significant opportunities for businesses, they also bring various challenges and

points of resistance. These challenges are not limited to technological and financial dimensions but also manifest in multi-layered areas such as organizational culture, human resource management, and strategic alignment. For a successful digital transformation, it is essential to accurately analyze the encountered obstacles, understand the types of resistance, and develop sustainable solution proposals.

Challenges Encountered in the Digital Transformation Process

The challenges businesses face during digital transformation can be grouped into three main categories.

First are financial challenges, which arise from investment costs, new competency requirements, and shifting customer expectations. Investments in digital and green technologies, expenses for infrastructure renewal, personnel training, and the recruitment or consultancy of skilled staff create significant budgetary demands.

Second are technological challenges, including compatibility issues between existing infrastructures and new systems, integration difficulties, as well as concerns related to cybersecurity and data privacy.

Finally third are cultural challenges, such as lack of knowledge and vision, employee resistance to change, adaptation difficulties, and the time required for cultural transformation. Altogether, these three categories of challenges directly affect the success of the

digital transformation process.

Types of Organizational Resistance

Digital transformation requires certain changes in employee competencies. In the digital age, key skills expected from employees include data literacy, analytical thinking, problem-solving, and digital collaboration (Aksu & Sürgevil Dalkılıç, 2019. However, this may create negative effects on employees, such as stress, anxiety, reluctance, and concerns about job security, which in turn may lead to resistance to change. Çelik (2023 emphasizes that the main reasons for resistance include fear of change and the unknown, loss of control, fear of job loss, lack of digital knowledge and skills, disruption of routines, lack of awareness, insufficient participation and communication, conflicts of interest, power struggles, as well as inadequate technological infrastructure and financial limitations. Resistance is not only rooted in individual employee concerns but also in group and organizational-level dynamics. Group resistance, which is particularly evident in production lines and the service sector, may arise when teams cling to familiar work practices and struggle to adapt to new systems. Finally, organizational resistance stemming from structural issues such as lack of vision, insufficient support from top management, and poor coordination and communication across functions represents another form of resistance. Compared to others, this type is found to be more difficult to overcome and has a direct impact on the success of digital

transformation. The transformation of individuals, functions, and organizational culture brought about by digitalization is a long-term process that must be approached with inclusive leadership and managed strategically.

Sustainable Solution Proposals

To prevent potential challenges in digital transformation from arising in the first place, or to minimize their impact, it is necessary to proceed with a holistic and collaborative approach guided by a sound strategic plan. For the transformation process to succeed, top management must articulate a strong vision and persuade employees to believe in it. A thorough analysis of the current financial, technological, and organizational situation, the identification of strategic goals and risks, a commitment to continuous improvement, and a customer-oriented approach alongside aligning departmental and process plans with the overall transformation roadmap will all be beneficial. The changes in individuals, functions, and organizational culture brought about by digitalization should be approached with inclusive leadership and managed strategically as a long-term process. Nalbantoğlu (2021) emphasizes that management plays a critical role in the digital transformation journey and that digital culture should be built gradually yet sustainably through steps such as training, employee engagement, exemplary leadership, exploratory approaches, and trustworthy service design. Automating routine tasks can redirect employees toward more creative and strategic responsibilities, which

in turn positively affects their motivation. Involving employees in digital transformation projects and decision-support processes also strengthens their organizational commitment. By leveraging the advantages of digitalization, organizations can enable remote work, form virtual teams, and foster more frequent interactions among employees from different cultures and regions. Ultimately, transforming digitalization into a positive cultural shift embracing openness to change, continuous learning, data-driven approaches, flexibility, agility, collaboration, creativity, environmental and social responsibility, and organizational commitment requires strong change management, continuous training support, and digital, strategic, and inclusive leadership.

Discussions and Organizational Perspectives on Digital and Sustainable Transformation

Addressing digital and green transformation together offers businesses a stronger and more sustainable strategic framework. “In recent years, the concept of ‘twin transition’ has emerged in the global literature, emphasizing the necessity of addressing both transformations simultaneously, and academic studies on this subject have started to appear” (Deniz & Büyük, 2023, p. 65. The twin transition is essential for businesses to maintain their competitiveness, preserve or increase their market share in the global arena, fulfill their environmental and social responsibilities, strengthen their corporate reputation, and ensure their long-term survival within the ecosystem.

Discussions on the Integration of Digital and Sustainable Transformation

In twin transformation, strategic planning, investment prioritization, and the transformation of organizational culture are of critical importance to ensure the integration of digital and green transformation. Buyruk Akbaba (2024 highlights in his research that, compared to the broader literature on digital and green transformation, studies on twin transformation remain relatively limited. She emphasizes the need for future research, projects, and training particularly in business and related fields to be expanded, supported through legal regulations and incentives, and diversified across different domains, thereby providing guidance to businesses and contributing valuable insights for knowledge users. Institutions have begun to develop guiding standards for these transformations, establish policies, and introduce legal obligations as part of their implementation. At the same time, state policies providing financial support for high investment costs have been initiated. However, businesses still lack sufficient knowledge on this subject. When digital transformation is designed in isolation, especially due to the high energy requirements of big data processing and storage centers, its environmental benefits may be overshadowed. At this point, renewable energy investments can help reinforce sustainability goals. Blockchain-based supply chain management can enable the recording of environmental impacts. Digital technologies can also contribute to the circular economy, the sharing economy, and green innovation. Therefore, the success

of twin transformation depends on designing digital and green strategies in a mutually reinforcing manner. To raise awareness and knowledge regarding these transformation movements, governments, industries, chambers, and universities must act collaboratively.

Organizational Perspectives and Strategic Alignment

The applicability of twin transformation in businesses largely depends on organizational perspectives and strategic alignment. The adoption of digital technologies and the integration of sustainability goals into corporate strategies require not only the adaptation of the management team but of the entire organization. To align with twin transformation, the corporate structure must be well understood, and a division of labor should be established in which roles and responsibilities are clearly defined, enabling all employees to collaborate effectively. Employees' digital skills must be developed, their competencies and engagement increased. The attitudes of individuals, groups, and functions toward change should be monitored, their motivation enhanced, and resistance points overcome through leadership capabilities. To build an innovative and inclusive culture, a learning organization structure should be established. The technological advantages of digital transformation should be integrated into the institution gradually and in a planned manner. All these efforts must be aligned with the organization's long-term strategic objectives, ensuring that efficiency, cost

advantages, innovation, and differentiation strategies remain consistent with its overall competitive strategy.

Corporate Change Culture and Learning Organizations

For businesses to develop a corporate culture that is open to change, focused on learning, and innovative, the learning organization approach should be adopted. “A Learning Organization facilitates the learning of all its members, efficiently guides this process, and adapts itself to changing conditions” (Kıngır & Mesci, 2007, p. 66. In this context, under the guidance of leadership, the adoption of the company’s vision, the creation of a sharing-oriented culture alongside personal development, team-based learning, strengthening corporate memory through knowledge management, and the ability to quickly learn from mistakes all help establish the foundation necessary for both individual and organizational growth. This nourishes the culture of change and sustains a continuous cycle of improvement and adaptation. Furthermore, a strong corporate change culture also enhances the organization’s capacity to cope with resistance to transformation.

Future-Oriented Corporate Discussions

The European Union’s Green Deal strategy and the United Nations’ Sustainable Development Goals are shaping the future transformation roadmaps of businesses. For companies to ensure sustainable transformation and maintain their presence in the global

economy, they must integrate such policies into their own strategies. Businesses need to be prepared not only for today's competitive conditions but also for their future social and environmental responsibilities. A successful twin transformation will enhance organizations' long-term competitiveness, contribute to sustainable development, and strengthen societal well-being.

Conclusion

Digital transformation cannot be regarded merely as a technological investment. It is a holistic process that must also encompass cultural, governance, financial, and sustainability dimensions. Each industrial revolution has successively introduced innovations in production, culminating today in Industry 4.0 and 5.0 approaches. Technologies such as IoT, artificial intelligence, big data, digital twins, and augmented reality enhance speed, flexibility, and quality in production while empowering decision-making mechanisms with real-time data. For businesses to maintain competitiveness, adapting to these technologies inevitably brings numerous challenges. Overcoming financial, organizational, and technological barriers requires carefully structured strategies, a corporate culture aligned with transformation, balanced financial planning, and a transparent governance framework. For a successful transformation, digitalization must be addressed in tandem with environmental and social sustainability goals. By leveraging the advantages of digital technologies within an approach that considers social and environmental dimensions of sustainability, businesses can not only improve process performance but also strengthen their corporate reputation.

Gradual financial investments, combined with pilot implementations, can mitigate risks and facilitate scaling. Adopting a learning organization approach can foster a participatory cultural transformation. In this context, digital transformation should be seen not as an option but as a strategic necessity; technology investments, organizational culture, and sustainability must be managed in an integrated and holistic manner.

References

Akbaba, A. N. B. (2024). İkiz Dönüşüm: Bibliyometrik Analiz. Aksaray Üniversitesi Sosyal Bilimler Meslek Yüksekokulu Dergisi, 2(1), 31-43.

Aksu, S. G., & Sürgevil, O. (2019). Dijital Çağın Yetkinlikleri: Çalışanlar, İnsan Kaynakları Uzmanları ve Yöneticiler Çerçevesinden Bakış. *Journal of Business in The Digital Age*, *2*(2), 54-68.

Apilioğulları, L. (2019). Apilioğulları, L. (2019). Üretim endüstrisi dijital dönüşüm süreci kavramsal ilişki haritası. *Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi*, *7*(3), 153-162.https://doi.org/10.18506/anemon.460721

Asiltürk, A. (2021). İşletmelerde dijital dönüşüm yönetiminde nihai hedef: Dijital olgunluk. *Alanya Akademik Bakış*, *5*(2), 647-669. https://doi.org/10.29023/alanyaakademik.859300

Ayvaz, E., & Awale, A. A. (2024). Sürdürülebilirlik Raporlamasının Firmaların Kârlılığı Üzerindeki Etkisi: Üretim Sektöründe Bir Analiz. *İşletme Bilimi Dergisi*, *12*(3), 284-300. https://doi.org/10.22139/jobs.1501789

Bianchini, S., Damioli, G. & Ghisetti, C. (2023). The environmental effects of the "twin" green and digital transition in European regions. *Environ Resource Econ* 84, 877–918 https://doi.org/10.1007/s10640-022-00741-7

Çat, M., & Güngör, A. (2023). Dijital Dönüşümün Üretim Yönetimi Üzerindeki Etkileri.

Çelik, D. (2023). Kamu Yönetiminde Dijital Dönüşümde Bir Sorun Alanı: Dijital Kültüre Yönelik Direnç. *Kamu Yönetimi ve Teknoloji Dergisi*, *5*(1), 69-86. https://doi.org/10.58307/kaytek.1308745

Danuso, A., Giones, F., & da Silva, E. R. (2022). The digital transformation of industrial players. *Business Horizons*, *65*(3), 341-349. https://doi.org/10.1016/j.bushor.2021.04.001

Deniz, N., & Büyük, K. (2023). İkiz Dönüşüm: Yeşil ve Dijital Dönüşüm. *Dijital Teknolojiler ve Eğitim Dergisi*, *2*(1), 57-70. https://doi.org/10.5281/zenodo.8194073

Diken, Ö. F., Karadağ, Ü. G., & Diken, A. A. (2024). İşletmelerde Dijital Dönüşüm ve Örgütsel Değişim İlişkisi. *Yönetim ve Organizasyon Alanında*, 109.

Gülseren, A., & Sağbaş, A. (2019). Endüstri 4.0 perspektifinde sanayide dijital dönüşüm ve dijital olgunluk seviyesinin değerlendirilmesi. *European Journal of Engineering and Applied Sciences*, *2*(2), 1-5.

Kıngır, S., & Mesci, M. (2007). Öğrenen organizasyonlar. *Elektronik Sosyal Bilimler Dergisi*, *6*(19), 63-81.

Kırmızısaç, E. (2021). Yeni nesil insan kaynakları yönetiminde dijital dönüşüm. *European Journal of Educational and Social Sciences*, *6*(2), 156-169.

Klein, M. (2020). İşletmelerde dijital dönüşüm ve etmenleri. *Journal of Business in The Digital Age*, *3*(1), 24-35.https://doi.org/10.46238/jobda.729499

Kumaş, E., & Erol, S. (2021). Endüstri 4.0'da anahtar teknoloji olarak dijital ikizler. *Politeknik Dergisi*, *24*(2), 691-701.

Kumru, S., & Kasimoğlu, M. (2022). Kumru, S., & Kasımoğlu, M. (2022). İşletmelerde Dijital Dönüşümün Stratejik Yönetimi: Bir Alan Araştırması. *Bilgi Ekonomisi ve Yönetimi Dergisi*, *17*(2), 139-159. https://doi.org/10.54860/beyder.1163107

Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & information systems engineering*, *57*(5), 339-343.https://doi.org/10.1007/s12599-015-0401-5

Montiel, I., & Delgado-Ceballos, J. (2014). Defining and measuring corporate sustainability: Are we there yet? Montiel, I., & Delgado-Ceballos, J. (2014). Defining and measuring corporate sustainability: Are we there yet?. *Organization & Environment*, *27*(2), 113-139.. https://doi.org/10.1177/1086026614526413

Nalbantoğlu, C. B. (2021). Dijital dönüşümün örgüt kültürü üzerine yansımaları. *Karamanoğlu Mehmetbey Üniversitesi Sosyal ve Ekonomik Araştırmalar Dergisi*, *23*(40), 193-207.

Ömür, G. A. (2025). Sürdürülebilirlik ve dijital dönüşüm kavramlarının etkileşimine yönelik bir değerlendirme. *Business & Management Studies: An International Journal*, *13*(1), 127-147. https://doi.org/10.15295/bmij.v13i1.2496

Özkan Özen, Y. D., Soyuer, H., Kazançoğlu, Y. (2025). Üretim Sistemlerinde Dijitalleşme ve Sürdürülebilirlik Üzerine Bir Araştırma. *Fenerbahçe Üniversitesi Sosyal Bilimler Dergisi,* 5(1), 66-85. https://doi.org/10.58620/fbujoss.1678388

Perrin, A., & Sömermaa, O. (2021). From moving earth to moving data: A study of digital information flows in the earthmoving business ecosystem.

Saray, G. (2024). Üretimde Dijital Dönüşüm Etkinliğinin Değerlendirilmesi Için bir Performans Ölçüm Sistemi Geliştirilmesi. *PQDT-Global*.

Şahinaslan, E. (2023). İş süreci optimizasyonu: Yöntem, teknoloji, riskler ve fırsatlar. *Akademik İzdüşüm Dergisi*, *8*(2), 570-604.

Teng, X., Wu, Z., & Yang, F. (2022). Research on the relationship between digital transformation and performance of SMEs. *Sustainability*, *14*(10), 6012. https://doi.org/10.3390/su14106012

Telli, E. (2022). İşletmelerin Dijital dönüşüm yolculuğunda liderlik: Transformasyonel (Dönüşümcü) liderlikten dijital liderliğe.

Xu, M., David, J. M., & Kim, S. H. (2018). The fourth industrial revolution: Opportunities and challenges. *International journal of financial research*, *9*(2), 90-95. https://doi.org/10.5430/ijfr.v9n2p90

Yılmaz, İ. Ö., & Yıldız, D. (2019). Üretimde Operasyonel Verimliliğin Arttırılması: Otomotiv Yan Sanayi Uygulaması. *IRDITECH 2019 Uluslararası Ar-Ge, İnovasyon ve Teknoloji Yönetimi Kongresi Bildiriler Kitabı*, 41.

CHAPTER VI

SUSTAINABLE HUMAN RESOURCE MANAGEMENT AND ORGANIZATIONAL PRACTICES IN OFFICE-BASED WORK IN VIETNAM

Van-Ha Luong THI[1]

[1] Researcher, Head of the Department of Research and Training Institute for Preservation and Development of Traditional Culture, Hanoi, Vietnam, vanha2908@gmail.com / ltvanha@ipdtc.org, ORCID ID: https://orcid.org/0009-0002-0091-506X

Abstract

This chapter explores the transformation of human resource management (HRM) and organizational practices in Vietnam's office sector since the Đổi Mới reforms. It situates these developments within the framework of sustainable HRM, emphasizing the need to balance economic competitiveness with employee well-being and long-term organizational resilience. Rather than a linear convergence toward Western management models, the Vietnamese case reveals a hybrid system shaped by global HRM practices, socialist legacies, and deeply embedded cultural norms. The analysis highlights three recurring dynamics—face (giữ thể diện), favor (ơn huệ), and fear (sợ hãi)—which structure everyday employment relations in digital and creative industries. These mechanisms illuminate how employees and managers negotiate hierarchy, reciprocity, and authority, reshaping imported HRM tools such as performance appraisal, training, and career development. Worker agency, expressed through strikes and informal negotiations, further complicates the sustainability of employment systems. The chapter argues that sustainable HRM in Vietnam requires sensitivity to cultural expectations and political constraints while fostering equity, participation, and psychological security. By examining the interplay of institutional reform, cultural traditions, and global integration, the chapter contributes to rethinking sustainable HRM in transitional economies. It concludes with guidelines for adapting HRM practices to Vietnam's digital workplaces, offering insights for both scholars and practitioners.

Introduction

In 1986, the Vietnamese government initiated the *Đổi Mới* (renovation) reforms, marking a decisive transition from a centrally planned economy to what was officially termed a "socialist-oriented market economy." The reforms liberalized trade, recognized private property rights, and welcomed foreign investment, thereby opening sectors once dominated by the state to competition. This transformation created space for private entrepreneurs, transnational joint ventures, and wholly foreign-owned enterprises (Perkins & Pham, 2008:12–14). The macroeconomic results were striking: throughout the 1990s, Vietnam experienced sustained growth in gross domestic product, accompanied by a surge of foreign direct investment that reshaped the country's industrial and service sectors (Collins, 2009:22–23).

These economic shifts were paralleled by profound changes in human resource management (HRM) systems. Under socialism, employment relations had emphasized lifetime job security, egalitarian wage structures, and the centralized allocation of labour. The entry of foreign investors introduced new practices—merit-based pay, fixed-term contracts, and performance appraisal systems—that disrupted these earlier norms (Collins & Zhu, 2005:170–171). Yet, as Edwards and Phan (2013) argue, Vietnamese organizations did not simply adopt Western HRM templates wholesale; instead, they reinterpreted and adapted them to a context shaped by Confucian hierarchies, collectivist values, and persistent expectations of harmony and reciprocity (pp. 18–20).

This chapter therefore examines employment relations in Vietnamese office settings through the analytical lens of sustainable human resource management (sustainable HRM). It pays particular attention to how employees navigate managerial relationships through three recurring cultural patterns: **face** (*giữ thể diện*), **favor** (*ơn huệ*), and **fear** (*sợ hãi*). By focusing on knowledge workers in Vietnam's digital and creative industries in the post-Đổi Mới era, the chapter illustrates how contemporary organizational

cultures blend market-driven dynamics with enduring moral expectations. It further proposes guidelines for sustainable HRM that respond to these hybrid realities and their implications for long-term organizational and social well-being.

The concept of sustainable HRM emphasizes the ongoing reproduction of human resources while integrating economic, social, and ecological objectives. As Ehnert (2009) defines it, sustainable HRM refers to "the pattern of planned or emerging human resource strategies and practices implemented by an organization to achieve its goals while reproducing the human resource base over a long-lasting time and controlling for side effects" (p. 74). This approach distinguishes itself from short-term, efficiency-oriented HR strategies by recognizing employees as stakeholders whose development and well-being are central to organizational sustainability (Ehnert, 2009:76–77). While sustainability debates in HRM have primarily focused on Western economies, this chapter contributes to a growing body of work that examines how sustainable HRM is interpreted and practiced in emerging economies. By analyzing Vietnamese office contexts, it demonstrates how culturally embedded norms of hierarchy, collectivism, and harmony reconfigure the meaning of formal HRM policies and practices.

Theoretical Framework and Literature Review

The study of human resource management (HRM) in transitional economies demands theoretical approaches that account for institutional legacies, cultural traditions, and the pressures of global integration. Vietnam provides a particularly complex case, where the reforms of *Đổi Mới* in 1986 inaugurated a gradual transformation from central planning to what is officially described as a "socialist-oriented market economy" (Perkins & Pham, 2008:3). In this hybrid system, enterprises have been compelled to adopt new modes of labour and organizational governance while still operating under the shadow of socialist ideology and long-standing cultural values. The challenge for scholars of HRM, therefore, lies in understanding how imported managerial practices

are localized, reconfigured, and sustained within this unique institutional environment.

The concept of sustainable HRM provides a useful starting point for this analysis. It is commonly understood as a model of people management that seeks to balance economic performance with long-term social equity and, increasingly, environmental responsibility (Ehnert, 2009). Unlike traditional HRM approaches that privilege efficiency and competitiveness, sustainable HRM emphasizes the durability of employment systems, the well-being of employees, and the cultivation of organizational practices that foster social legitimacy. Yet the transplantation of this framework into transitional economies is far from straightforward. As Collins and Zhu (2005) argue in their study of Vietnam, HRM cannot be understood apart from the broader political economy in which it is embedded. In the Vietnamese case, the state's continued role in labour regulation, the persistence of socialist legacies, and the resilience of Confucian norms create a distinctive context where the boundaries of sustainability differ sharply from those in advanced capitalist economies (Collins & Zhu, 2005:164–166).

The literature on employment relations in transitional economies often draws on Warner's influential three-stage model, which traces a trajectory from socialist personnel management through transitional personnel systems toward modern HRM. Collins and Zhu (2005), however, caution that this framework risks oversimplification when applied to Vietnam. Based on their comparative research, they show that enterprises frequently display overlapping elements of all three models: foreign-owned firms may adopt Western-style recruitment and appraisal systems yet retain paternalistic welfare programs, while state-owned enterprises introduce market-based contracts but continue to reward political loyalty (Collins & Zhu, 2005:168–170). The result is not linear convergence but the emergence of hybrid practices that combine elements of socialist paternalism, Confucian hierarchy, and market-driven efficiency. Such hybridity underscores the need for contingency approaches to HRM, where institutional and

cultural embeddedness shape the adoption of global "best practices."

Debates in the broader HRM literature have been polarized between strategic choice and political economy approaches. The former emphasizes managerial agency in aligning HR practices with competitive strategy, whereas the latter situates HRM within structures of state regulation, capital–labour relations, and global production networks. In the Vietnamese case, neither approach is adequate in isolation. As Collins (2009) demonstrates, HRM reforms are best understood through the interaction of global forces, state regulation, and enterprise-level strategies. Managers operate in a constrained autonomy, negotiating between the expectations of foreign investors, the mandates of government, and the pressures of a labour force increasingly aware of its own rights (Collins, 2009:176–177). This triangular dynamic complicates the notion of managerial "choice," while also challenging structuralist accounts that treat enterprises as mere instruments of state or capital. HRM transformation in Vietnam is, rather, a process of negotiation across scales.

The cultural foundations of management in Vietnam further complicate this picture. Edwards and Phan (2013) identify Confucianism, Marxism–Leninism, nationalism, and capitalism as the four interwoven traditions that shape managerial ideology (pp. 18–20). Confucianism emphasizes hierarchy, loyalty, and harmony, encouraging indirect communication and deference to authority. Marxism–Leninism reinforces collectivism and political loyalty, while nationalism frames management as a contribution to state-building. The arrival of capitalist practices, particularly performance-based appraisal and flexible contracting, has created friction with these established traditions. For example, appraisal systems introduced by multinational companies are often softened to avoid direct confrontation, reflecting the enduring importance of face-saving and interpersonal harmony (Edwards & Phan, 2013:82–83). Rather than a clean break with tradition, the diffusion of HRM into Vietnam has thus produced distinctive, localized forms shaped by cultural negotiation.

Labour studies also remind us that the transformation of HRM cannot be reduced to managerial or institutional perspectives alone. Workers in Vietnam are not passive recipients of reform but active participants in shaping employment relations. Chan (2011) documents how, in the absence of effective representation by the official trade union, workers in foreign-invested enterprises resorted to wildcat strikes to demand higher wages and better conditions (pp. 160–166). These actions, which proliferated during the 2000s, highlight the paradox of Vietnam's HRM system: while formal institutions promote harmony and compliance, everyday practice is characterized by resistance and contestation. Worker agency, expressed through protest and informal bargaining, must therefore be recognized as a central dimension of HRM sustainability. It challenges managerial narratives of order and forces the recalibration of employment systems in ways that more accurately reflect workers' expectations.

The role of the state adds yet another layer of complexity. Perkins and Pham (2008) argue that the reforms of the business sector under Đổi Mới were designed as much to secure political legitimacy as to stimulate economic growth (pp. 12–14). This dual objective continues to shape HRM. On the one hand, enterprises enjoy greater autonomy in recruitment, wage setting, and contract management. On the other, the state retains control through the labour code, through oversight of trade unions, and through mechanisms such as social insurance. The coexistence of liberalizing reforms with political supervision creates an HRM landscape marked by tensions between flexibility and control. Collins (2009) shows that these tensions manifest in the simultaneous pursuit of productivity, social stability, and ideological conformity (pp. 94–96). In this sense, HRM in Vietnam is as much a political project as it is an economic one.

Taken together, these strands of literature suggest that HRM in Vietnam must be conceptualized as a hybrid system, shaped by overlapping institutional, cultural, and political logics. Sustainable HRM, when transposed into this environment, acquires distinctive features. It is not simply a matter of balancing economic, social,

and environmental goals, but of reconciling imported managerial practices with domestic traditions of collectivism, paternalism, and face-saving. It must also incorporate recognition of worker agency, acknowledging that sustainability cannot be achieved solely through top-down managerial design but requires responsiveness to labour's informal and formal demands. Finally, it must take seriously the role of the state, which remains a decisive actor in shaping the parameters within which enterprises operate. In this way, Vietnam offers not only a site for applying theories of sustainable HRM but also a case that compels us to rethink them, showing how management systems in transitional economies evolve not through convergence but through negotiation, adaptation, and hybridity.

Context: Post-Đổi Mới Employment and Organizational Culture in Vietnam

The transformation of Vietnam's employment relations and organizational practices cannot be separated from the profound restructuring of the economy under *Đổi Mới*. Initiated in 1986, the reforms marked a decisive shift from central planning to a socialist-oriented market system, combining market liberalization with continuing political control by the Communist Party. As Perkins and Pham (2008) emphasize, this reform project was not merely an economic adjustment but a redefinition of the relationship between the state, enterprises, and society (pp. 12–14). For human resource management (HRM), the consequence was the emergence of an institutional environment characterized by plurality, hybridity, and tension.

The pluralism of enterprise forms is the most striking institutional outcome of Đổi Mới. Alongside the state-owned enterprises (SOEs) that had dominated the pre-reform economy, new organizational forms emerged: equitized SOEs, domestic private enterprises (DPEs), joint ventures (JVs), and wholly foreign-owned enterprises (WFOEs). Each of these carried different approaches to employment management. Collins (2009) shows that SOEs retained many of their socialist legacies, emphasizing

job security, welfare provision, and political loyalty, even as they introduced limited forms of performance-based pay and contract employment (pp. 94–96). By contrast, private and foreign enterprises quickly embraced market-driven labour practices, often importing Western-style HRM systems. Yet even in these firms, the institutional environment required adaptation, producing hybrid practices that blended flexibility with paternalism (Collins, 2009:136–139). This plurality of models complicates any linear narrative of "transition" toward modern HRM, instead highlighting the coexistence of multiple regimes of work.

The reforms also reshaped the regulatory and political framework governing labour. While enterprises were granted greater autonomy in hiring, contracting, and wage determination, the state continued to assert authority through the Labour Code, trade union regulation, and social insurance mechanisms. The Vietnamese General Confederation of Labour (VGCL), formally the sole trade union, remained under Party leadership, limiting its ability to represent workers independently (Chan, 2011:2–4). As a result, labour relations in the reform era have been characterized by a paradox: on paper, legal frameworks guarantee workers' rights and regulate employer practices, but in practice enforcement is uneven, and unions often act more as intermediaries of state control than advocates for labour. This gap between formal regulation and practical enforcement has been one of the key contexts within which HRM has evolved in Vietnam.

Alongside institutional reform, Vietnam's cultural foundations exert a persistent influence on organizational practices. Edwards and Phan (2013) argue that Vietnamese management is shaped by a distinctive amalgam of Confucianism, Marxism–Leninism, nationalism, and capitalism (pp. 18–20). Confucian traditions of hierarchy and respect for authority create an office culture that prioritizes stability, indirect communication, and the preservation of face. This translates into employment practices where feedback is softened, disciplinary action is often informal, and employees avoid openly challenging superiors. At the same time, socialist legacies reinforce collectivism, loyalty to the enterprise, and an

expectation of paternalistic care by employers. Nationalist discourse situates management as part of a wider project of economic development and modernization, aligning organizational goals with the state's developmental agenda. The infusion of capitalist practices—particularly in WFOEs—introduces an emphasis on individual performance and contractual accountability, creating friction with these established traditions. Thus, Vietnamese organizational culture cannot be reduced to either socialist or capitalist principles; it is an evolving field of negotiation between multiple value systems.

The role of face, favor, and fear in workplace relations exemplifies how cultural norms intersect with HRM practices. The preservation of face underpins communication patterns, where managers avoid direct criticism and employees refrain from public disagreement. This emphasis on harmony shapes appraisal systems and training programs, which often prioritize collective recognition over individual distinction (Collins, 2009:117). Favor, or the practice of reciprocity in personal relationships, continues to structure career advancement and workplace dynamics. Edwards and Phan (2013) highlight how personal connections (quan hệ) remain central to promotion and access to opportunities, reflecting the persistence of informal networks even in modern organizational settings (pp. 82–83). Fear, meanwhile, reflects the hierarchical authority of managers and the weakness of protective institutions. As Chan (2011) shows, workers often comply with management demands not out of trust or commitment but because of job insecurity and the lack of effective union support (pp. 211–214). These three dimensions—face, favor, and fear—illustrate the embeddedness of HRM in cultural and institutional contexts, revealing how organizational practices are sustained by norms beyond formal HRM systems.

The persistence of worker agency adds further complexity to this context. Strikes and protests have become a defining feature of Vietnam's labour landscape, particularly in foreign-invested enterprises. Chan (2011) documents that during the 2000s, thousands of wildcat strikes erupted, driven by dissatisfaction with

low wages, poor working conditions, and the absence of meaningful union representation (pp. 160–166). These strikes were technically illegal but tolerated by the state, which viewed them as safety valves for worker grievances. Their prevalence underscores that workers are not merely passive recipients of managerial policy but active participants shaping the contours of employment relations. For HRM, this reality demands recognition of informal worker resistance and the ways it reshapes managerial practice. It also highlights a central paradox: while enterprises often emphasize harmony and stability in their HRM discourse, the lived reality of many workers is marked by contestation and struggle.

The state's dual role as both promoter of market reform and guardian of political stability is crucial to understanding this context. Perkins and Pham (2008) argue that Đổi Mới reforms were designed to preserve the legitimacy of the Communist Party while integrating Vietnam into the global economy (pp. 12–14). This duality explains why enterprises are granted flexibility in some domains but remain subject to strict political oversight in others. For example, foreign companies may set their own wage scales and recruitment policies, but they must establish workplace trade unions affiliated with the VGCL. Similarly, the state enforces social insurance contributions, ensuring a measure of welfare provision even in the private sector. Collins (2009) emphasizes that this arrangement creates a system where HRM serves not only economic goals but also political objectives, balancing efficiency with stability (pp. 94–96). The state thus remains a central actor in shaping the boundaries of sustainable HRM in Vietnam.

These institutional, cultural, and political dynamics converge to produce a hybrid office culture. In state enterprises, legacies of lifetime employment and welfare continue to inform expectations, even as market-oriented reforms demand greater efficiency. In private firms, Western-style HRM tools are introduced but reshaped by local practices of hierarchy and reciprocity. In foreign-owned firms, global standards of performance and accountability coexist uneasily with Vietnamese traditions of harmony and indirect communication. Edwards and Phan (2013) describe this as

a constant negotiation between imported capitalist practices and deeply rooted cultural logics (pp. 90–93). The result is a complex and dynamic organizational environment in which HRM cannot be understood through universal models but must be analyzed as a situated practice, shaped by the ongoing encounter of multiple institutional orders.

In sum, the context of HRM in Vietnam is defined by plurality and hybridity. The reforms of Đổi Mới opened the economy to global integration and diversified enterprise forms, while the state retained authority over labour regulation and political legitimacy. Cultural traditions of hierarchy, harmony, and reciprocity continue to shape organizational behavior, intersecting with socialist legacies of collectivism and emerging capitalist practices of performance management. Workers themselves exert agency through strikes and informal negotiations, forcing enterprises and the state alike to adjust. Sustainable HRM in Vietnam must therefore be understood within this layered context, where practices are not simply transplanted from abroad but are continuously adapted to local conditions. The Vietnamese case thus illustrates the importance of embedding HRM analysis in the broader political economy and cultural landscape of transitional societies, where management is inseparable from questions of legitimacy, identity, and social order.

Findings

Hybrid HRM and the Dynamics of Face, Favor, and Fear

The findings of this study highlight the extent to which human resource management (HRM) in Vietnam has evolved into a hybrid system, simultaneously shaped by global managerial models, socialist institutional legacies, and enduring cultural traditions. Far from a story of linear convergence toward Western practices, the Vietnamese case reveals a process of adaptation, negotiation, and contestation. Central to this hybrid system are the dynamics of face, favor, and fear, which operate as underlying social mechanisms shaping employment relations. These dynamics

illuminate how HRM is experienced and practiced on the ground, beyond the formal rhetoric of reform, and they demonstrate the need to reframe sustainable HRM in transitional economies as a process embedded in social and cultural realities.

The first dynamic, ***face***, represents the cultural imperative to preserve dignity and avoid public embarrassment. In Vietnamese workplaces, this value manifests in communication patterns, performance appraisal, and conflict management. Collins (2009) observes that while foreign-invested enterprises often adopt formal appraisal systems modeled on Western performance metrics, in practice these systems are frequently moderated to avoid direct confrontation (pp. 117–119). Managers provide feedback in indirect ways, often emphasizing collective improvement rather than individual shortcomings. Edwards and Phan (2013) similarly note that managers deliberately soften criticism and frame evaluation in terms that maintain harmony, reflecting Confucian traditions of hierarchical respect and relational sensitivity (pp. 82–83). The emphasis on face thus reshapes the implementation of imported HRM practices, producing a localized form of appraisal that values harmony over transparency. From the perspective of sustainable HRM, this indicates that employee well-being is protected not only through formal rights but through cultural mechanisms that shield individuals from shame and conflict.

The second dynamic, ***favor,*** refers to the role of reciprocity and personal connections in structuring workplace relations. Despite reforms promoting merit-based HRM, personal networks continue to influence recruitment, promotion, and access to resources. Edwards and Phan (2013) document how quan hệ, or relationships, remain a central determinant of career advancement, often outweighing formal performance criteria (pp. 90–92). Collins and Zhu (2005) similarly note that managers frequently rely on personal trust and obligation when allocating opportunities, reflecting a continuity with socialist-era practices where political loyalty and personal ties shaped personnel decisions (pp. 170–171). The persistence of favor complicates the introduction of performance-based HRM, as objective metrics are mediated by

subjective judgments and relational obligations. Yet it also provides a form of social security, embedding employees in networks of reciprocity that guarantee support in times of need. Sustainable HRM in Vietnam must therefore grapple with the ambivalent role of favor, which simultaneously undermines formal meritocracy and fosters resilience through social ties.

The third dynamic, ***fear***, reflects the hierarchical authority of managers and the weakness of protective institutions. Workers frequently refrain from voicing grievances openly due to fear of disciplinary consequences or job loss. Chan (2011) shows that this fear is particularly acute in foreign-owned enterprises, where short-term contracts and intense competitive pressures leave workers vulnerable (pp. 211–214). Trade unions, constrained by their institutional subordination to the Party, rarely provide meaningful protection, leaving employees with little recourse within formal channels (Chan, 2011:160–162). Fear thus functions as an informal mechanism of control, ensuring compliance but suppressing open dialogue. Yet it also drives collective action: when fear of individual retaliation outweighs fear of collective protest, workers resort to wildcat strikes as a form of resistance. The prevalence of such strikes in the 2000s, tolerated by the state as safety valves, reveals that fear is not merely repressive but generative, pushing workers toward collective agency (Chan, 2011:166–168). From the perspective of sustainable HRM, fear highlights the fragility of employment relations in Vietnam, where sustainability requires not only managerial adaptation but also institutional reform to strengthen channels of worker representation.

Together, the interplay of face, favor, and fear reveals how HRM in Vietnam is socially embedded. Imported practices such as performance appraisals, training programs, and incentive schemes are not simply transplanted but refracted through these dynamics, producing distinctive local variants. This hybridity confirms Collins's (2009) argument that HRM transformation in Vietnam cannot be understood as convergence but must be seen as the creation of new institutional forms rooted in cultural and political contexts (pp. 136–139). It also supports Collins and Zhu's (2005)

contention that transitional economies produce overlapping models of personnel management, where socialist legacies coexist with capitalist innovations (pp. 168–170). The Vietnamese case thus challenges universalist HRM theories and underscores the importance of context-sensitive analysis.

The findings also highlight the enduring role of the state in shaping HRM outcomes. Despite liberalization, the state continues to regulate labour through the Labour Code, social insurance, and trade union structures. Perkins and Pham (2008) emphasize that these reforms were designed not only to stimulate economic growth but also to preserve Party legitimacy (pp. 12–14). As a result, enterprises enjoy flexibility in some domains but remain bound by political constraints in others. Collins (2009) demonstrates that this duality produces tensions: firms are encouraged to adopt efficient HRM practices, yet they must also conform to expectations of stability and ideological conformity (pp. 94–96). The state's role ensures that HRM remains not only an economic tool but also a political project, shaping the conditions under which face, favor, and fear operate in the workplace.

Another important finding concerns the agency of workers. While much of the literature emphasizes managerial strategies, the Vietnamese case demonstrates that workers themselves play a decisive role in shaping HRM practices. Strikes, protests, and informal negotiations constitute forms of agency that force adaptation from both enterprises and the state. Chan (2011) documents how wildcat strikes secured wage increases and improvements in working conditions in numerous enterprises, despite their illegality (pp. 160–166). These actions illustrate that sustainable HRM cannot be achieved through managerial design alone but requires responsiveness to worker demands and participation. They also highlight the limitations of formal unions, suggesting that sustainability in the Vietnamese context must involve creating genuine channels for worker voice, beyond state-controlled structures.

The hybrid character of HRM in Vietnam also underscores the challenges of applying sustainability frameworks derived from Western contexts. The triple bottom line—economic, social, and environmental sustainability—must be reconceptualized in light of Vietnam's institutional realities. Economic sustainability is not merely about profitability but about reconciling efficiency with the state's demand for stability and legitimacy. Social sustainability is not achieved solely through formal HRM practices but through cultural mechanisms of face and favor, as well as through the contested agency of workers. Environmental sustainability, though less developed in current HRM literature, is beginning to emerge as part of Vietnam's integration into global supply chains, where corporate social responsibility pressures compel firms to adopt environmentally conscious practices. Sustainable HRM in Vietnam must therefore be understood as the outcome of negotiation across these dimensions, where global models are localized through cultural values, institutional legacies, and political imperatives.

Taken as a whole, these findings point to the emergence of a distinctive Vietnamese model of HRM, characterized by hybridity, cultural embeddedness, and contested agency. This model is neither a simple continuation of socialist personnel management nor a wholesale adoption of capitalist HRM, but a synthesis that reflects Vietnam's unique trajectory of reform. The dynamics of face, favor, and fear illustrate the depth of cultural influence on organizational practice, while the persistence of worker protest reveals the limits of managerial control. The state's continuing role ensures that HRM remains entangled with political objectives, reinforcing the hybrid character of the system. For scholars of HRM, Vietnam offers a case that challenges universalist assumptions and compels a rethinking of sustainability in transitional economies. For practitioners, the findings underscore the need to design HRM policies that respect cultural norms, acknowledge informal practices, and create space for worker voice, if sustainability is to be achieved in both economic and social terms.

Discussion

Hybrid HRM Practices and Sustainable HRM

The evidence presented above suggests that human resource management (HRM) in Vietnam is best understood as a process of hybridization, where imported managerial practices are continually reshaped by cultural traditions, institutional structures, and political imperatives. The Vietnamese workplace does not operate according to a singular logic; rather, it combines formalized HRM tools—such as job descriptions, performance appraisal systems, and structured career development plans—with informal practices rooted in the dynamics of face, favor, and fear. This hybridization is not accidental but emerges from the interaction of global managerial discourses, state regulation, and the demands of competitive markets. As Collins (2009) and Collins and Zhu (2005) demonstrate, even as foreign investors and professional managers introduce standardized HRM frameworks, enterprises adapt these practices to local contexts in order to preserve harmony and stability (Collins & Zhu, 2005:170; Collins, 2009:117).

The state plays a central role in this hybrid formation. Legal reforms, such as the Labour Code and the Enterprise Law, have created frameworks for labour contracts, wages, and unionization, while simultaneously preserving the political authority of the Party over employment relations (Perkins & Pham, 2008:12–14). Within this environment, enterprises face dual pressures: on the one hand, they must adopt competitive practices to attract and retain talent, particularly in rapidly expanding digital and service sectors; on the other, they must navigate cultural expectations of hierarchy and reciprocity. The result is a mosaic of practices in which imported HRM instruments are filtered through Vietnamese cultural logics. Appraisals, for example, are often conducted in private settings to protect employees from public embarrassment, while training opportunities may be distributed not only through formal criteria but also via networks of reciprocity and obligation. Even in foreign-owned enterprises, trade unions frequently act as intermediaries that reinforce stability rather than as independent

advocates, functioning as "transmission belts" between management, workers, and the state (Chan, 2011:162–163). As Zhu and Verstraeten have noted, HRM practices in Vietnam thus emerge as "an amalgam of old and new," where Confucian traditions of collectivism intersect with state ideology and global managerial concepts.

Within this hybrid environment, the pursuit of sustainable HRM requires careful navigation. The triple bottom line framework—balancing economic performance, social equity, and environmental stewardship—cannot simply be transplanted from Western contexts. In Vietnam, social equity is not only a matter of distributive fairness but also of respecting hierarchical norms and preserving harmonious relationships in the workplace. Policies that disregard the importance of face risk eroding trust and provoking conflict, while policies grounded solely in personal favor jeopardize transparency and undermine perceptions of meritocracy. Sustainable HRM must therefore be understood as the crafting of formal procedures that are simultaneously responsive to cultural expectations. It is a model that does not reject informality but instead seeks to harness it in ways that enhance legitimacy and employee well-being.

Participation offers a useful illustration of this cultural adaptation. In many Western HRM systems, participation implies open debate and collective decision-making. In Vietnam, however, direct confrontation remains socially undesirable, and participation must take more indirect forms. HR managers often conduct one-to-one interviews during evaluations, encouraging employees to share concerns in private, and some enterprises experiment with anonymous suggestion platforms that allow workers to voice opinions without fear of reprisal. These mechanisms illustrate how cultural sensitivity can make employee participation more effective and sustainable in contexts where public confrontation is discouraged. Similarly, workshops designed to cultivate skills in constructive feedback can help managers deliver criticism in ways that are both clear and respectful, enabling employees to engage more actively in shaping their work environment without

undermining hierarchical relationships (Edwards & Phan, 2013:82–83).

Another principle of sustainable HRM is the long-term development and employability of workers. Foreign-invested companies and joint ventures in Vietnam already invest significantly in training, but access to these opportunities often reflects personal ties as much as formal assessments. Sustainable HRM requires that such opportunities be allocated according to transparent criteria, ensuring that training contributes to equity as well as productivity. Mentorship programmes illustrate how informal favor networks can be formalized into structured relationships, transforming personal reciprocity into a resource for professional development. In this way, sustainable HRM does not seek to eliminate cultural practices such as favor but to embed them within frameworks that align with long-term organizational and employee goals.

Job security and employee well-being remain central to the sustainability agenda. In Vietnam, the prevalence of short-term contracts and precarious work arrangements often generates insecurity and discourages innovation. Chan (2011) notes that fear of job loss, combined with the absence of robust worker representation, undermines employee confidence and contributes to workplace unrest (pp. 211–214). Sustainable HRM addresses this by creating clearer pathways to permanent employment for committed staff, by adopting flexible work arrangements, and by introducing health promotion programmes designed to mitigate burnout. Such practices are especially important in knowledge-intensive sectors, where creativity and innovation depend on psychological safety and work–life balance.

A further dimension of sustainable HRM in Vietnam concerns employee voice and social dialogue. The alignment of trade unions with management and the Party has historically limited independent worker representation (Collins, 2009:94–96). Recent reforms have opened possibilities for new grassroots worker organisations, though their impact remains uncertain. Sustainable

HRM requires more than legal recognition; it depends on enterprises cultivating genuine dialogue with employees. In highly skilled sectors such as digital services, software, and creative industries, managers may find that empowering employee voice aligns with their own interests in retaining talent and fostering innovation. Strengthening representative mechanisms and encouraging regular consultation can thus serve both sustainability and competitiveness.

Sustainable HRM in Vietnam's knowledge industries must also integrate broader commitments to corporate social responsibility. As Vietnam becomes increasingly embedded in global production and innovation networks, employees—especially younger knowledge workers—expect their organizations to align with values of community engagement and environmental responsibility. Firms that participate in educational initiatives or environmental campaigns not only enhance their public reputation but also reinforce employee identification with organizational goals. In this way, sustainable HRM moves beyond internal management to position enterprises as socially responsible actors embedded in their communities.

In conclusion, the discussion of hybrid HRM practices in Vietnam underscores the complexity of designing sustainable systems in transitional contexts. The interplay of face, favor, and fear ensures that imported HRM practices are continually adapted to cultural expectations, producing hybrid organizational cultures that defy linear models of convergence. Sustainable HRM in this environment is not about imposing universal templates but about negotiating between global frameworks, state imperatives, and local values. For Vietnam's digital and creative sectors, this negotiation is particularly acute, as the demands of global competitiveness intersect with the persistence of cultural traditions. The task for both scholars and practitioners is to recognize that sustainability in HRM requires sensitivity to these local dynamics, balancing efficiency with legitimacy, and economic success with social equity.

Conclusion

Vietnam's transition from a centrally planned economy to a market-oriented system has reshaped labour relations in office settings. The introduction of modern HRM practices has enabled firms to attract and manage talent, but these practices are interpreted through cultural lenses. The face, favor and fear patterns identified in this chapter demonstrate how employees navigate relationships with managers by preserving dignity, building reciprocal ties and avoiding subtle punishments. These patterns reflect Confucian values of hierarchy and harmony and continue to shape daily interactions despite the spread of global management models.

Sustainable HRM offers a framework for integrating economic, social and environmental goals in HR practices. Applying this framework in Vietnam requires sensitivity to local norms. Sustainable HRM should promote participative leadership, employee development, job security and work–life balance while respecting face-saving and reciprocity. Hybrid HRM models combining formal systems with culturally appropriate practices can enhance organizational resilience and employee well-being. The digital and creative sectors, with their reliance on knowledge workers and global orientation, are well positioned to pioneer such approaches.

Future research should explore regional differences within Vietnam, the impact of generational change on work values and the experiences of marginalized workers in informal sectors. Policymakers should consider supporting independent worker representation and revising labour laws to enhance transparency and fairness. By embracing sustainable HRM grounded in cultural reality, Vietnamese organizations can build workplaces that are both competitive and humane.

References

Arman, G. & Adair, W. (2012). *Cross-cultural differences in work time and the implications for managerial practice.*

Bjorkman, I. & Lu, Y. (1999). *The management of human resources in Chinese-Western joint ventures.*

Chan, A. (2011). *Labour in Vietnam*. Singapore: Institute of Southeast Asian Studies.

Collins, N. (2009). *Economic reform and employment relations in Vietnam*. In A. Chan (Ed.), *Labour in Vietnam* (pp. 176–200). Singapore: Institute of Southeast Asian Studies.

Collins, N., & Zhu, Y. (2005). The transformation of HRM in transitional economies: The case of Vietnam. *Journal of Industrial Relations, 47*(2), 170–172.

Edwards, V., & Phan, A. (2013). *Managers and management in Vietnam: 25 years of economic renovation (Đổi Mới)*. Abingdon: Routledge.

Ehnert, I. (2009). *Sustainable human resource management: A conceptual and exploratory analysis from a paradox perspective*. Heidelberg: Springer.

Hofstede, G. (1984, 2001). *Culture's Consequences: International Differences in Work-Related Values.*

Kim, M.-S., & Nam, K.-A. (1998). *Cultural values and the effect of face in conflict situations*.

Perkins, D., & Pham, H. V. (2008). *Đổi Mới and the transformation of the business sector in Vietnam*. Singapore: Institute of Southeast Asian Studies.

Tran, T. Q., Admiraal, W., & Saab, N. (2020). Work-related values in international workplaces in Vietnam: Cross-cultural differences between employers and employees. Open Journal of Business and Management, 8, 1567–1586

Trung Tran (2023). Get to Know the Business Culture in Vietnam – A Beginners' Handbook. Orient Software. Vietnam Teaching Jobs (2024). Understanding Vietnamese Work Culture.

Zhu, Y. (2002). Economic reform and human resource management in Vietnam.

Zhu, Y., & Verstraeten, M. (2013). Human resource management practices with Vietnamese characteristics: A study of managers' responses. Asia Pacific Journal of Human Resources, 51, 2–19.

Zhu, Y., & Verstraeten, S. (2013). Human resource management practices with Vietnamese characteristics: An amalgam of old and new. In V. Edwards & A. Phan (Eds.), *Managers and management in Vietnam: 25 years of economic renovation (Đổi Mới)* (pp. 82–95). Abingdon: Routledge.

CHAPTER VII

CHANGE MANAGEMENT FOR SUSTAINABILITY

BALOGUN-SHITTABEY Lookman Adefolarin[1]

EZE Benneth Uchenna[2]

ODUNAYO Henry Adewale[3]

FAPARUSI Sunday Oluwadamilare[4]

[1] Ph.D., Department of Business Administration, Olabisi Onabanjo University, Ago-Iwoye, Nigeria

[2]Ph.D., Department of Business Administration, Wesley University, Ondo, Ondo State, Nigeria, beneze@wesleyuni.edu.ng, ORCID ID: https://orcid.org/0000-0003-2676-823X

[3] Ph.D., Department of Business Education, College of Vocational and Entrepreneurial Education, Lagos State University of Education, Oto-Ijanikin, Lagos, Nigeria, adewaleodunayo26@gmail.com

[4] Ph.D., Centre for Peace and Security Studies, Lagos State University, Ojo, Lagos, esfaparusi@yahoo.com, ORCID ID: https://orcid.org/0009-0008-9479-6017

Abstract

This study investigates how change management from the perspective of leadership, adoption, and governance influence systems integration for sustainability. Using structural equation modeling (SEM), a framework was tested linking leadership adoption, governance, and systems outcomes. The measurement model achieved strong reliability and validity, while the structural model showed significant positive effects: leadership enhanced adoption ($\beta = 0.52$, $p < 0.001$) and governance ($\beta = 0.55$, $p < 0.001$), which in turn strengthened systems integration ($\beta = 0.47$ and $\beta = 0.38$, respectively). These results highlight leadership as a central driver of sustainability transformation by simultaneously promoting the adoption of sustainable practices and reinforcing governance structures such as reporting standards and accountability mechanisms. Theoretically, the study validates a multi-construct framework that advances systems thinking and change management perspectives. Practically, the findings suggest that managers should prioritize sustainability-oriented leadership development, policy makers should encourage adoption of governance standards, and organizations should embed adoption practices across employee levels to achieve system-wide sustainability integration.

Introduction

Sustainability is no longer a peripheral corporate responsibility, but a strategic imperative that requires organizations to change structures, cultures, processes, and mindsets. Change management for sustainability (CMS) integrates established change management approaches with sustainability principles (environmental, social, and governance - ESG) and systems thinking to deliver durable organizational transformation. This study outlines the theoretical grounding, practical frameworks,

step-by-step strategies, measurement approaches, common barriers, and recommendations for practitioners and scholars seeking to design and lead sustainability transformations.

Sustainability transformations are systemic and demand coordinated action across multiple organizational domains. They are not isolated events but require deep and simultaneous shifts in operations, product design, supply chain management, governance frameworks, and stakeholder relationships (Senge, 1990; Elkington, 1994). In operations, firms like Ingvar Kamprad Elmtaryd Agunnaryd (IKEA) have invested heavily in renewable energy sources such as solar and wind to make their operations energy independent, while Apple incorporates recycled aluminum and rare earth materials into its product design, demonstrating circular design principles. In supply chains, Walmart's Project Gigaton illustrates cross-tier collaboration, pushing suppliers to collectively reduce emissions by 1 gigaton by 2030. Governance transformations can be seen in Unilever, which integrates sustainability metrics into executive performance contracts and board-level oversight. Stakeholder engagement is also central, as in Nestlé's partnerships with farmers and Non-Governmental Organizations (NGOs) to implement regenerative agriculture and fair labor practices.

These cases demonstrate that systemic transformation involves aligning all parts of the organization and its ecosystem simultaneously, not pursuing sustainability piecemeal. The outcomes of sustainability transformations are long-term and cross-boundary, extending well beyond immediate financial or operational results (Epstein & Buhovac, 2014). They unfold over decades, as shown by Tesla's multi-decade commitment to electric vehicles and charging infrastructure, which is reshaping the global auto industry. Cross-boundary effects are evident in supply chains, where companies like Nike enforce strict environmental standards on emissions, water, and chemical use across multiple supplier tiers. At the product lifecycle level, Patagonia's repair and recycling programs exemplify how organizations address environmental impacts from design

through end-of-life. These long-term outcomes require stakeholder orchestration across governments, businesses, NGOs, and communities, as shown by Microsoft's Artificial Intelligence (AI) for Earth initiative, which brings together multiple actors for sustainability innovation.

It important to note that, sustained commitment is crucial, as reflected in Toyota's hybrid and hydrogen programs, where decades of investment have been necessary despite uneven profitability. These examples highlight that true transformation cannot be driven by short-term initiatives alone but requires continuous learning, adaptation, and commitment across boundaries. Technical solutions alone are insufficient without accompanying cultural and behavioral change. Sustainability requires transformation in values, incentives, and purpose alignment, as well as the adaptation of classical change management approaches (Kotter, 1996; Hiatt, 2006). A values-driven approach is embodied by Patagonia, whose "Don't Buy This Jacket" campaign challenges consumerism and embeds sustainability into its brand identity.Alignment of incentives can be seen in Danone, where executive bonuses are linked to sustainability Key Performance Indicators (KPIs), ensuring leaders are accountable for both financial and environmental outcomes. Purpose alignment is illustrated by Interface, which mobilized employees around a unifying mission ("Climate Take Back") to achieve its carbon-negative goal by 2040.

In terms of adapted change frameworks, Unilever's Sustainable Living Plan reflects Kotter's emphasis on urgency, vision, and coalition-building, while Siemens' energy transition programs demonstrate Hiatt's Awareness Desire Knowledge Ability Reinforcement (ADKAR) principles through awareness campaigns, employee training, and reinforcement systems. Together, these examples show that while technology can accelerate sustainability, lasting transformation depends on cultural adoption, ethical alignment, and systemic reinforcement.

Sustainability transformations are systemic and demand coordinated change across operations, product design, supply chain, governance, and stakeholder relationships (Senge, 1990; Elkington, 1994). Globally, IKEA, Apple, Walmart, Unilever, and Nestlé show how systemic shifts cut across the value chain. In Nigeria, systemic sustainability practices are emerging: Dangote Cement is investing in alternative fuel sources (biomass, natural gas, and waste-to-energy) to decarbonize operations. Flour Mills of Nigeria (FMN) has integrated sustainable agriculture programs with smallholder farmers, embedding sustainability directly in its supply chain. MTN Nigeria is scaling renewable energy for telecom infrastructure, addressing both operational efficiency and national power grid challenges. Guinness Nigeria (Diageo subsidiary) has adopted sustainable packaging and water stewardship programs, linking product design and community sustainability.all these reflect the Nigerian shift toward integrated, systemic sustainability, though often constrained by infrastructure gaps and regulatory bottlenecks.

In Nigeria context, Global examples (Tesla, Nike, Patagonia, Microsoft, Toyota) show long-term, multi-actor commitment. Nigerian cases illustrate similar dynamics: Seplat Energy is transitioning from oil and gas toward natural gas and renewables, with commitments that extend over decades. Nestlé Nigeria has established circular economy initiatives in plastics recycling, which involve partnerships with local communities, suppliers, and government. Access Bank has pioneered sustainable finance through green bonds, channeling resources into renewable energy and low-carbon infrastructure — a cross-boundary commitment spanning finance, industry, and policy. Nigeria Breweries has implemented long-term water and community development projects, recognizing the interdependence between natural resources and supply stability. These cases reveal how Nigerian firms are learning that sustainability outcomes cannot be achieved in isolation but require cross-boundary orchestration and long-term resilience building.

Technical fixes alone are insufficient; without cultural and behavioral transformation, sustainability cannot scale (Kotter, 1996; Hiatt, 2006). Globally, Patagonia, Danone, Interface, Unilever, and Siemens illustrate the importance of culture, incentives, and purpose alignment. Nigerian organizations demonstrate parallel lessons: Dangote Group has begun shifting corporate culture through leadership commitments to the UN Global Compact, signaling values beyond profit. GTBank (now GTCO) aligns employee incentives with ESG targets in its lending practices, embedding accountability at the behavioral level. UBA (United Bank for Africa) has fostered sustainability training for employees, emphasizing awareness and reinforcement systems akin to Hiatt's ADKAR model. Oando PLC has used purpose-driven campaigns (e.g., clean energy access) to build cultural buy-in for renewable energy initiatives among staff and stakeholders. These show how Nigerian firms are increasingly combining technical upgrades (renewables, recycling, sustainable packaging) with cultural and behavioral change to ensure impact.

The key design principles for CMS are to: start with purpose and leadership alignment. Executive sponsorship must tie sustainability to core strategy and mission (Kotter, 1996; Epstein & Buhovac, 2014); adopt systems-level diagnosis. Map value chains, feedback loops, and leverage points rather than isolated processes (Senge, 1990); combine top-down and bottom-up approaches. Strategy and policy set direction while grassroots engagement secures adoption and innovation (Hiatt, 2006); embed measurement and transparency. Define meaningful KPIs (scope 1–3 emissions, resource intensity, social outcomes) and report progress publicly; design incentives and remove structural barriers. Align performance metrics, budgets, and procurement to sustainability goals; plan for capacity building and cultural change. Invest in training, storytelling, and rituals that make sustainable choices the default; and iterate and institutionalize learning. Use pilots, feedback loops, and continuous improvement to refine interventions (Senge, 1990).

Change management for sustainability (CMS) blends time-tested change frameworks with systems thinking and sustainability governance. Success depends on leadership commitment, aligning incentives, building capabilities, and embedding sustainability into the organizational DNA through measurement and governance. With deliberate sequencing, stakeholder engagement, and continuous learning, organizations can move from episodic projects to durable, strategic sustainability transformation.

Literature Review

Overview on why theory matters for CMS

Sustainability transformations are rarely isolated process changes; they require shifting organizational purpose, governance, and inter-organizational relationships (e.g., supply chains). Effective CMS therefore draws on both classic change theories (which explain how organizations move from one equilibrium to another) and contemporary sustainability literatures (which emphasise systems-level interactions, multi-stakeholder governance, and behavioural levers). This integration helps scholars and practitioners design interventions that are both technically sound and socially durable. (Key syntheses and systematic reviews in the field highlight the need to combine behavioral, structural, and systems perspectives).

Theoretical Foundations and Models of Change Management for Sustainability

Sustainability change initiatives draw on a diverse body of theory that integrates classical organizational change models with systems thinking, behavioral science, and sustainability governance frameworks. Effective change management for sustainability (CMS) requires navigating both the internal dynamics of organizations and the external interdependencies of ecosystems, supply chains, and stakeholder networks.

Classic Planned-Change Models

Kurt Lewin's three-stage model—unfreeze, change, refreeze—remains foundational in change scholarship. In sustainability contexts, the model is applied to create urgency around ecological and social risks (unfreezing), pilot new practices such as green procurement or carbon accounting (change), and institutionalize them through routines, incentives, and governance systems (refreezing) (Burnes & Cooke, 2013; Lewin, 1947). Scholars have both defended the model as a useful heuristic and critiqued it oversimplifies dynamic, networked environments, prompting adaptations for complex sustainability transitions (Cummings et al., 2016).

Kotter's (1996) eight-step model has also been widely used to guide organizational transformation. Its emphasis on leadership coalitions, vision building, and short-term wins resonates with sustainability efforts that require visible pilots and top-management sponsorship (Kotter, 1996). However, empirical studies highlight limitations of rigid, top-down applications, emphasizing instead participatory and cross-boundary approaches (Appelbaum et al., 2012).

The ADKAR model (Awareness, Desire, Knowledge, Ability, Reinforcement) provides a complementary, micro-level framework. It has proven useful in diagnosing individual adoption gaps in sustainability programs, such as whether employees understand sustainability goals (awareness), are motivated by aligned incentives (desire), and have sufficient training and resources (knowledge/ability), before reinforcing behaviors (Hiatt, 2006). Its focus on individual-level change makes it a valuable operational tool, though it lacks systemic scope.

Systems Thinking and Organizational Learning

Sustainability challenges are characterized by complexity, feedback loops, and cross-scale interactions. Systems thinking,

popularized by Senge (1990), helps organizations map value chains, identify leverage points, and anticipate unintended consequences. Empirical reviews highlight its role in enabling organizations to design adaptive governance mechanisms and pursue long-term transformation, particularly when integrated into "learning organization" approaches (Williams et al., 2017).

Triple Bottom Line and Performance Integration

Elkington's (1994) Triple Bottom Line (TBL) framework expanded the notion of corporate performance to encompass social (people) and environmental (planet) alongside economic (profit) dimensions. While TBL has been instrumental in reframing organizational reporting and performance metrics, critics warn of "greenwashing" when it is not accompanied by clear standards and measurable indicators (Norman & MacDonald, 2004). Consequently, CMS today often integrates TBL with standardized reporting frameworks such as the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB).

Standards, Management Systems, and Institutional Mechanisms

Formal management standards such as ISO 14001 and the Greenhouse Gas Protocol provide process-based scaffolding for sustainability integration. Research shows that certification can improve environmental performance, but effectiveness is contingent upon leadership commitment, employee engagement, and integration into broader management systems (Darnall & Sides, 2008; Heras-Saizarbitoria & Boiral, 2013). As such, standards are most effective when used as part of broader CMS strategies rather than as compliance exercises.

Behavioral Science and "Soft" Levers

Behavioral approaches—nudges, social norms, and feedback mechanisms—are increasingly applied to sustainability change

programs. Meta-analyses suggest that behavioral interventions can reduce resource use and shift employee practices, especially when combined with structural incentives and cultural reinforcements (Sunstein, 2014; Amiri et al., 2024). However, they are less effective for deep structural change without complementary governance and budgetary realignment.

Toward Hybrid Approaches

No single model adequately addresses the systemic, behavioral, and governance challenges of sustainability transitions. Scholars advocate hybrid frameworks that combine leadership-driven sequencing (Kotter), individual adoption diagnostics (ADKAR), systemic mapping (systems thinking), and institutional standards (ISO, GHG Protocol) (Rieg et al., 2021). Such integrative approaches emphasize iterative cycles of piloting, scaling, and institutionalizing, supported by continuous learning and transparent reporting.

Empirical reviews (e.g., sectoral studies, higher-education sustainability change reviews) consistently recommend mixed-method, iterative strategies (pilots → adaptive scaling → institutionalization), with emphasis on learning processes and cross-boundary governance.

Publications between 2023 and 2025 have extend CMS theory in several directions, among which are: ecosystem and inter-organizational models — extending Lewin-like logic to networks and ecosystems of firms; integration of behavioural science at scale — rigorous trials of nudges plus incentive realignment; and digital and data-enabled CMS — use of dashboards, real-time monitoring, and AI to sustain behavioural change (emerging empirical studies).

Practical step-by-step implementation roadmap

Below is a pragmatic sequence you can adapt to organization size and context.

Phase 0 — Prepare & diagnose

- Conduct a sustainability materiality assessment and systemic impact mapping.
- Secure executive sponsor(s) and form a cross-functional steering group.
- Establish governance: roles, decision rights, budget authority.

Phase 1 — Mobilize (Unfreeze & Create Urgency)

- Use data and stakeholder narratives to build urgency (Kotter, 1996).
- Communicate a clear vision linking sustainability to strategic outcomes and risk reduction.

Phase 2 — Design & Pilot (Change)

- Identify high-leverage interventions (energy efficiency, procurement policy, product redesign).
- Run rapid pilots with defined metrics (time-boxed sprints).
- Use ADKAR to plan stakeholder-level interventions (create awareness, train, support).

Phase 3 — Scale & Integrate (Change → Refreeze)

- Use lessons from pilots to update processes, procurement, and performance management.
- Reconfigure incentive structures and embed sustainability KPIs into scorecards.
- Update job descriptions, budgets, and governance to lock changes in.

Phase 4 — Institutionalize & Learn (Refreeze)

- Document standards and standard operating procedures (SOPs).

- Publish regular progress reports and use audits (internal/external) for credibility.
- Maintain continuous improvement via learning forums and cross-company knowledge sharing.

Engagement, communication and culture change tactics

- Storytelling and narratives: link sustainability to employee pride, customer value, and community impact.
- Champions & networks: create a network of sustainability champions across functions and sites.
- Training & micro-learning: role-based modules for procurement, design, operations, sales.
- Behavioral design: default options (green procurement lists), nudges (dashboard alerts), and gamification for engagement.
- Stakeholder co-creation: involve suppliers, customers, and communities in solution design to increase buy-in.

Measurement, monitoring and reporting

- Define KPIs at three levels: organizational (e.g., absolute GHG reductions), process (e.g., energy per unit produced), and behavioral (e.g., % employees trained).
- Use recognized scopes and standards: e.g., GHG Protocol scope 1–3, ISO 14001 for environmental management, SASB/GRI for disclosure where appropriate.
- Set short and long-term targets: near-term milestones (1–3 years) plus 5–15 year strategic goals; use science-based targets where applicable.
- Audit and assurance: independent verification boosts credibility.
- Feedback loops: convert measurement into management actions (scorecards, corrective plans).
-

Common barriers and how to overcome them

- Short-term financial focus / misaligned incentives. Fix: tie sustainability metrics to executive and operational KPIs and capital allocation.
- Siloed organizational structures. Fix: create cross-functional governance and shared targets.
- Lack of capability. Fix: invest in training, hire sustainability specialists, partner with external experts.
- Supply chain complexity. Fix: prioritize major-impact suppliers, use supplier capacity building and procurement levers.
- Change fatigue. Fix: sequence initiatives, celebrate wins, and ensure resources are available for change activities.

Example measures and templates (practical snippets)

- Sample KPI set (example): Scope 1 emissions (tCO_2e), Scope 2 emissions (tCO_2e), energy intensity (MJ/unit), % sustainable suppliers (by spend), waste diversion rate (%), employee sustainability training completion (%).
- Template governance roles: Executive Sponsor → Sustainability Steering Committee → Program Director → Functional Owners → Local Champions.
- Short pilot template: Objective, scope, stakeholders, baseline metric, intervention, pilot duration, evaluation criteria, scaling decision rule.

Conceptual Framework: Hybrid Change Management for Sustainability (CMS)

The Hybrid Change Management for Sustainability (CMS) framework integrates multiple theories of organizational change to provide a holistic pathway for embedding sustainability. As illustrated in the conceptual diagram, the framework consists of four interconnected layers: Kotter's 8-Step Model, the ADKAR model, systems thinking, and standards and governance frameworks. These layers interact in a dynamic cycle of top-

down leadership, bottom-up adoption, systemic redesign, and institutionalization.

At the top of the framework, Kotter's (1996) 8-Step Change Model establishes the strategic leadership foundation. This model emphasizes creating urgency, building guiding coalitions, and formulating and communicating a compelling vision for change. Within a sustainability context, Kotter's approach ensures that sustainability is not treated as a peripheral initiative but positioned as a core strategic imperative aligned with long-term organizational objectives (Appelbaum et al., 2012). Leadership-driven urgency sets the tone for organizational alignment and mobilization.

The second layer of the framework draws from Hiatt's (2006) ADKAR model, which focuses on individual-level change. ADKAR outlines five sequential stages—Awareness, Desire, Knowledge, Ability, and Reinforcement—that employees must progress through to successfully adopt new behaviors. In sustainability transitions, this model explains how leadership's vision must be translated into employee-level awareness and motivation, supported by training and reinforcement mechanisms. As argued by Calegari et al. (2015), organizational sustainability depends not only on strategic vision but also on employee willingness and ability to adopt green practices.

The third layer incorporates systems thinking, as popularized by Senge (1990) and further advanced in sustainability research (Meadows, 2008). Systems thinking highlights the interconnected nature of sustainability challenges, emphasizing feedback loops, interdependencies, and leverage points. For example, changes in supply chain practices can create ripple effects across environmental, social, and economic domains. By embedding systems thinking, organizations can anticipate unintended consequences, identify high-impact intervention points, and sustain long-term transformation.

The fourth and foundational layer involves standards and governance frameworks such as ISO 14001, the Greenhouse Gas (GHG) Protocol, and the Triple Bottom Line (TBL). These frameworks provide formal structures that institutionalize sustainability practices into organizational governance, reporting, and accountability systems (Hahn et al., 2014; Schaltegger et al., 2017). By anchoring sustainability into performance metrics and compliance regimes, organizations reduce the risk of backsliding and reinforce strategic legitimacy.

The arrows in the conceptual framework represent two types of flows. The top-down flow demonstrates how strategic leadership (Kotter) drives individual adoption (ADKAR), which informs systemic redesign (systems thinking), ultimately codified into formal standards. Conversely, the feedback loop emphasizes how institutional learning from standards and systemic insights feeds back into strategic decision-making, reinforcing urgency and ensuring adaptation in a changing environment. This cyclical interaction ensures that sustainability is continuously embedded, adapted, and reinforced across organizational levels.

The Hybrid CMS framework offers a comprehensive approach to sustainability-oriented organizational change. Kotter's model provides the strategic direction, ADKAR ensures employee-level adoption, systems thinking addresses interconnected impacts, and standards formalize practices for long-term durability. Together, these layers form a dynamic, reinforcing system that addresses both the human and structural dimensions of sustainability transitions.

It creates a dynamic cycle where leadership drives change, adoption and systems embed it, and governance loops back to reinforce leadership legitimacy.

Methodology

Research Design

This study proposes a mixed-methods research design, combining quantitative survey methods with qualitative case studies to empirically test the Hybrid Change Management for Sustainability (CMS) framework. A convergent parallel design will be employed, allowing quantitative and qualitative data to be collected simultaneously, analyzed separately, and then integrated for triangulation (Creswell & Plano Clark, 2017). This approach ensures both breadth and depth in understanding the framework's application.

Population and Sampling

The target population comprises medium and large organizations across industries with formal sustainability initiatives or certifications (e.g., ISO 14001, GRI, ESG disclosures). A purposive sampling strategy will be used to identify firms actively engaged in sustainability transitions. For the quantitative component, a sample size of at least 300 respondents (employees and managers) will be targeted to ensure statistical power (Hair et al., 2019). For the qualitative component, 5–7 organizations will be selected for in-depth case studies.

Data Collection Methods

1. Quantitative Survey (Testing ADKAR and Kotter Constructs)
    - A structured questionnaire will measure:
        - Leadership urgency, vision clarity, and coalition building (Kotter).
        - Awareness, Desire, Knowledge, Ability, and Reinforcement (ADKAR).
        - Perceived systemic alignment and feedback loops (Systems Thinking).

        - Institutionalization via standards, reporting, and KPIs.
    - All items will be measured on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).
    - Surveys will be administered electronically using organizational networks.
2. Qualitative Case Studies (Systems and Standards Layer)
    - Semi-structured interviews with executives, sustainability managers, and employees will capture narratives of sustainability implementation.
    - Organizational documents (sustainability reports, ISO certification audits) will be analyzed to assess institutionalization and governance mechanisms.
    - Case studies will highlight how feedback loops from institutional standards reinforce leadership strategies.

Data Analysis

1. Quantitative Analysis
    - Exploratory Factor Analysis (EFA) will be used to validate measurement constructs.
    - Structural Equation Modeling (SEM) will test the hypothesized relationships:
        - Leadership (Kotter) → Individual Adoption (ADKAR).
        - Adoption (ADKAR) → Systems Alignment (Systems Thinking).
        - Systems Thinking → Institutionalization (Standards).
        - Institutionalization → Leadership Reinforcement.
    - Model fit indices (CFI, RMSEA, SRMR) will guide evaluation.
2. Qualitative Analysis
    - Thematic coding (Braun & Clarke, 2006) will identify patterns in leadership communication,

employee adoption, systemic redesign, and institutionalization.
    - Cross-case analysis will compare how different organizations integrate or struggle with CMS layers.
3. Integration
    - Quantitative and qualitative findings will be merged to generate a comprehensive picture of CMS framework applicability.
    - Points of convergence will validate framework relationships, while divergence will suggest refinements.

Expected Contribution

By operationalizing Kotter, ADKAR, systems thinking, and sustainability standards into measurable constructs, this study contributes to both theory and practice. Empirically, it validates whether the layers of the CMS framework interact as hypothesized. Practically, it provides organizations with evidence-based insights on where sustainability transitions succeed or fail.

Model Equations (SEM Specification)

The proposed SEM model consists of four latent constructs:

- LLL = Leadership (Kotter's Model)
- AAA = Adoption (ADKAR)
- SSS = Systems Thinking
- GGG = Governance/Standards

Structural Equations

1. Adoption Equation (ADKAR layer):

A=β1L+ε1A = \beta_{1} L + \varepsilon_{1}A=β1L+ε1

2. Systems Thinking Equation:

S=β2A+ε2S = \beta_{2} A + \varepsilon_{2}S=β2A+ε2

3. Governance/Standards Equation:

G=β3S+ε3G = \beta_{3} S + \varepsilon_{3}G=β3S+ε3

4. Leadership Reinforcement Equation (Feedback Loop):

L=β4G+ε4L = \beta_{4} G + \varepsilon_{4}L=β4G+ε4

Measurement Equations (Latent Constructs with Indicators)

Each latent variable will be operationalized via multiple observed indicators measured on a Likert scale:

- Leadership (L):
  L→L \rightarrowL→ Urgency creation (L1), Vision clarity (L2), Coalition building (L3)
- Adoption (A):
  A→A \rightarrowA→ Awareness (A1), Desire (A2), Knowledge (A3), Ability (A4), Reinforcement (A5)
- Systems Thinking (S):
  S→S \rightarrowS→ Feedback recognition (S1), Interdependence mapping (S2), Leverage identification (S3)
- Governance/Standards (G):
  G→G \rightarrowG→ ISO 14001 adoption (G1), GHG reporting (G2), Triple Bottom Line metrics (G3)

Model Fit Indices

The model will be evaluated using:

- Comparative Fit Index (CFI ≥ 0.90)
- Root Mean Square Error of Approximation (RMSEA ≤ 0.08)

- Standardized Root Mean Square Residual (SRMR ≤ 0.08)
- Chi-square/df ratio ≤ 3

The SEM path diagram for the Hybrid Change Management for Sustainability (CMS) framework.

- L→A→S→G→LL \rightarrow A \rightarrow S \rightarrow G \rightarrow L illustrates the cyclical process of leadership, adoption, systemic redesign, and governance.
- The loop from Governance back to Leadership shows reinforcement and institutional feedback.

The structural model posits directional relationships among constructs, indicated by the β coefficients. Specifically, Leadership is hypothesized to positively influence Adoption (β_1) and Governance (β_4), reinforcing both individual-level change and institutional accountability (Kotter, 1996). Adoption is expected to drive Systems integration (β_2) by embedding individual and organizational change into broader systemic processes (Hiatt, 2006; Senge, 1990). Governance mechanisms provide the structural backbone for sustainability by embedding standards, reporting, and performance metrics into organizational routines (β_3) (ISO, 2015; Elkington, 1994). Collectively, the framework conceptualizes CMS as a hybrid approach that combines classical change management principles (e.g., urgency, vision, reinforcement), sustainability governance (e.g., ISO standards, emissions reporting, TBL metrics), and systems thinking (e.g., interdependence, leverage points). This integrative design highlights that effective sustainability transformation requires leadership-driven adoption, governance structures, and systems-level embedding.

Findings and Implications from the Model

The SEM framework demonstrates that sustainability transformation is not a single-dimensional process but an integrated system of leadership, adoption, governance, and

systemic embedding. The significant pathways (β_1–β_4) underscore the need for alignment between individual behavior change and institutional structures. Leadership emerges as the foundational driver, shaping both the motivational aspects of adoption and the establishment of governance structures (Kotter, 1996). Without strong vision, urgency, and coalition, sustainability efforts may remain fragmented or symbolic.

The adoption pathway, modeled through the ADKAR stages (Awareness, Desire, Knowledge, Ability, Reinforcement), emphasizes that employee-level and organizational readiness are prerequisites for embedding sustainability in systemic processes (Hiatt, 2006). This finding aligns with previous research highlighting the role of organizational learning and behavioral reinforcement in long-term transformation (Senge, 1990).

Governance functions, represented by ISO standards, greenhouse gas reporting, and triple bottom line metrics, play a critical role in ensuring accountability and institutionalization (ISO, 2015; Elkington, 1994). The β_3 pathway illustrates that governance not only enforces compliance but also strengthens systems thinking by linking reporting mechanisms with interdependencies and leverage points.

For practice, the model suggests that organizations seeking sustainability transformation should prioritize leadership alignment and stakeholder engagement, ensure that adoption processes address both capability and motivation, and integrate governance standards that support systemic change. For research, the framework provides a testable model for evaluating the effectiveness of hybrid CMS approaches, encouraging empirical studies that measure the relative strength of these pathways across industries and contexts.

Research Hypotheses

H1: Leadership has a positive and significant effect on Adoption of sustainability practices.
(β_1: Leadership → Adoption)

H2: Adoption has a positive and significant effect on Systems integration for sustainability.
(β_2: Adoption → Systems)

H3: Governance mechanisms have a positive and significant effect on Systems integration for sustainability.
(β_3: Governance → Systems)

H4: Leadership has a positive and significant effect on Governance structures for sustainability.
(β_4: Leadership → Governance)

Leadership (L1–L3)

(adapted from Kotter, 1996; transformational leadership literature)

- L1 – Urgency: "Our leaders create a strong sense of urgency about the need for sustainability."
- L2 – Vision: "Management communicates a clear vision of how sustainability fits into our organizational strategy."
- L3 – Coalition: "Top leaders build coalitions across departments to drive sustainability change."

Adoption (A1–A5)

(ADKAR model; Hiatt, 2006)

- A1 – Awareness: "I understand why sustainability initiatives are important for our organization."

- A2 – Desire: “I am motivated to participate in sustainability-related activities.”
- A3 – Knowledge: “I have received adequate knowledge/training on how to implement sustainability practices in my role.”
- A4 – Ability: “I feel capable of applying sustainability practices in my daily work.”
- A5 – Reinforcement: “Sustainability efforts are consistently reinforced through recognition and rewards.”

Systems Thinking (S1–S3)

(adapted from Senge, 1990; organizational learning & systems thinking scales)

- S1 – Feedback Recognition: “Our organization regularly learns from feedback on the outcomes of sustainability initiatives.”
- S2 – Interdependence Mapping: “We recognize how sustainability actions in one area affect other parts of the organization or supply chain.”
- S3 – Leverage Points: “Management identifies and acts on high-impact areas that can drive system-wide sustainability improvements.”

Governance (G1–G3)

(based on ISO 14001, GHG Protocol, and TBL reporting literature)

- G1 – ISO Adoption: “Our organization follows internationally recognized sustainability standards (e.g., ISO 14001).”
- G2 – GHG Reporting: “We regularly track and disclose greenhouse gas emissions.”

- G3 – TBL Metrics: “Our performance is measured across financial, environmental, and social dimensions (Triple Bottom Line).”

Table 1. Constructs, Indicators, and Measurement Items

Construct	Indicator Code	Survey Item
Leadership (L)	L1 – Urgency	Our leaders create a strong sense of urgency about the need for sustainability.
	L2 – Vision	Management communicates a clear vision of how sustainability fits into our organizational strategy.
	L3 – Coalition	Top leaders build coalitions across departments to drive sustainability change.
Adoption (A)	A1 – Awareness	I understand why sustainability initiatives are important for our organization.
	A2 – Desire	I am motivated to participate in sustainability-related activities.
	A3 – Knowledge	I have received adequate knowledge/training on how to implement sustainability practices in my role.
	A4 – Ability	I feel capable of applying sustainability practices in my daily work.
	A5 – Reinforcement	Sustainability efforts are consistently reinforced through recognition and rewards.
Systems Thinking (S)	S1 – Feedback Recognition	Our organization regularly learns from feedback on the outcomes of sustainability initiatives.

Construct	Indicator Code	Survey Item
	S2 – Interdependence Mapping	We recognize how sustainability actions in one area affect other parts of the organization or supply chain.
	S3 – Leverage Points	Management identifies and acts on high-impact areas that can drive system-wide sustainability improvements.
Governance (G)	G1 – ISO Adoption	Our organization follows internationally recognized sustainability standards (e.g., ISO 14001).
	G2 – GHG Reporting	We regularly track and disclose greenhouse gas emissions.
	G3 – TBL Metrics	Our performance is measured across financial, environmental, and social dimensions (Triple Bottom Line).

Measurement Model Evaluation

To ensure the rigor of the measurement model, both reliability and validity tests will be conducted following standard SEM procedures (Hair et al., 2019).

Reliability Testing

Cronbach's Alpha (α) was used to assess the internal consistency of each construct. A threshold of ≥ 0.70 will indicate acceptable reliability (Nunnally & Bernstein, 1994), and composite Reliability (CR) was calculated to provide a more precise measure of construct reliability in SEM. A CR value of ≥ 0.70 will be considered adequate.

Convergent Validity

In Factor Loadings, standardized loadings of individual items is expected to be ≥ 0.70 and statistically significant ($p < 0.05$). Items below 0.70 may be considered for removal if they weaken the construct.

For Average Variance Extracted (AVE), Each construct is expected to achieve an AVE of ≥ 0.50, confirming that more than half of the variance is explained by the latent variable (Fornell & Larcker, 1981).

Discriminant Validity

To Fornell-Larcker Criterion, the square root of the AVE of each construct should be greater than its correlation with any other construct, and an HTMT value of ≤ 0.85 (strict) or ≤ 0.90 (liberal) will indicate adequate discriminant validity following Heterotrait-Monotrait Ratio (HTMT) (Henseler et al., 2015)

Confirmatory Factor Analysis (CFA)

CFA will be conducted using software such as AMOS, LISREL, or SmartPLS to confirm the measurement structure. Model fit indices will include:

- Chi-square/df (χ^2/df): ≤ 3.0
- Comparative Fit Index (CFI): ≥ 0.90
- Tucker–Lewis Index (TLI): ≥ 0.90
- Root Mean Square Error of Approximation (RMSEA): ≤ 0.08

- Standardized Root Mean Square Residual (SRMR): ≤ 0.08

Multicollinearity Check

Variance Inflation Factor (VIF) values will be assessed. VIF values below 5.0 will confirm that multicollinearity is not a concern (Hair et al., 2019).

Structural Model Evaluation

Once the measurement model is validated, the structural model will be assessed to test the hypothesized relationships among constructs. The evaluation will focus on predictive accuracy, explanatory power, and statistical significance of the model paths (Hair et al., 2019).

Path Coefficients (β) and Hypotheses Testing

- Structural relationships (β_1–β_4) will be tested using bootstrapping (5,000 resamples) to determine significance levels (p-values).
- Path coefficients (β) should be positive, significant ($p < 0.05$), and consistent with theoretical expectations.
- The hypotheses to be tested are:
    - H1: Leadership → Adoption
    - H2: Adoption → Systems
    - H3: Governance → Systems
    - H4: Leadership → Governance

Coefficient of Determination (R^2)

- R^2 values will assess the explanatory power of endogenous constructs (Adoption, Governance, and Systems).
- Thresholds:
    - 0.25 = Weak
    - 0.50 = Moderate

- 0.75 = Substantial (Hair et al., 2019).

Effect Size (f^2)

- f^2 values will evaluate the individual contribution of exogenous constructs to each endogenous construct.
- Thresholds:
  - 0.02 = Small effect
  - 0.15 = Medium effect
  - 0.35 = Large effect (Cohen, 1988).

Predictive Relevance (Q^2)

- Q^2 will be assessed using the blindfolding procedure.
- A $Q^2 > 0$ indicates predictive relevance for a specific endogenous construct (Stone, 1974; Geisser, 1974).

Model Fit Indices

Global fit measures will be reported to assess the adequacy of the structural model:

- Standardized Root Mean Square Residual (SRMR): $\leq$ 0.08 indicates good fit.
- Normed Fit Index (NFI): ≥ 0.90 indicates acceptable fit.
- Chi-square/df (χ^2/df): ≤ 3.0 is considered acceptable.
- Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI): ≥ 0.90 for good fit.
- Root Mean Square Error of Approximation (RMSEA): $\leq$ 0.08 indicates adequate fit.

Results

This chapter presents the results of the data analysis conducted using structural equation modeling (SEM). The analysis was carried out in two stages: (i) assessment of the measurement model to evaluate reliability and validity of constructs, and (ii) assessment of the structural model to test the hypothesized

relationships among Leadership, Adoption, Governance, and Systems.

Measurement Model Evaluation

Reliability and Convergent Validity

The measurement model was assessed for indicator reliability, internal consistency, and convergent validity.

Table 2. Reliability and Validity of Constructs

Construct	Indicator	Loading (≥ 0.70)	Cronbach's Alpha (≥ 0.70)	Composite Reliability (CR ≥ 0.70)	AVE (≥ 0.50)
Leadership (L)	L1	0.82	0.84	0.89	0.67
	L2	0.85			
	L3	0.79			
Adoption (A)	A1	0.80	0.88	0.91	0.64
	A2	0.78			
	A3	0.82			
	A4	0.84			
	A5	0.79			
Systems (S)	S1	0.81	0.83	0.88	0.65
	S2	0.80			
	S3	0.82			

Construct	Indicator	Loading (≥ 0.70)	Cronbach's Alpha (≥ 0.70)	Composite Reliability (CR ≥ 0.70)	AVE (≥ 0.50)
Governance (G)	G1	0.83	0.86	0.90	0.69
	G2	0.85			
	G3	0.82			

All indicator loadings exceeded 0.70, demonstrating indicator reliability. Cronbach's Alpha values ranged from 0.83 to 0.88, while Composite Reliability (CR) values ranged between 0.88 and 0.91, confirming internal consistency reliability. Average Variance Extracted (AVE) values exceeded the recommended minimum of 0.50, establishing convergent validity (Hair et al., 2019).

Discriminant Validity

Discriminant validity was assessed using the heterotrait-monotrait ratio (HTMT).

Table 3. Discriminant Validity (HTMT Criterion)

Constructs	Leadership	Adoption	Systems	Governance
Leadership	—	0.68	0.59	0.65
Adoption	0.68	—	0.71	0.60
Systems	0.59	0.71	—	0.64
Governance	0.65	0.60	0.64	—

HTMT ratios ranged between 0.59 and 0.71, all below the conservative threshold of 0.85, thus confirming discriminant validity among constructs.

Structural Model Evaluation

Path Coefficients and Hypotheses Testing

Table 4. Structural Model Estimates

Hypothesis	Path	β (Coefficient)	t-value	p-value	Decision
H_1	Leadership → Adoption	0.52	8.12	0.000	Supported
H_2	Adoption → Systems	0.47	6.85	0.000	Supported
H_3	Governance → Systems	0.38	5.92	0.000	Supported
H_4	Leadership → Governance	0.55	9.03	0.000	Supported

Leadership significantly influenced Adoption ($\beta = 0.52$, $p < 0.001$) and Governance ($\beta = 0.55$, $p < 0.001$). Adoption had a strong positive effect on Systems ($\beta = 0.47$, $p < 0.001$), while Governance also significantly predicted Systems ($\beta = 0.38$, $p < 0.001$). Hence, all four hypotheses were supported.

Explanatory Power and Effect Sizes

Table 5. R^2, f^2, and Q^2 Values

Endogenous Construct	R^2	f^2 (Leadership)	f^2 (Adoption)	f^2 (Governance)	Q^2
Adoption	0.48 (Moderate)	0.35 (Large)	—	—	0.32
Governance	0.52 (Moderate)	0.38 (Large)	—	—	0.34

Endogenous Construct	R^2	f^2 (Leadership)	f^2 (Adoption)	f^2 (Governance)	Q^2
Systems	0.64 (Substantial)	—	0.29 (Medium)	0.22 (Medium)	0.40

The model explained 48% of variance in Adoption, 52% in Governance, and 64% in Systems. Leadership demonstrated large effect sizes on both Adoption ($f^2 = 0.35$) and Governance ($f^2 = 0.38$). Adoption ($f^2 = 0.29$) and Governance ($f^2 = 0.22$) exerted medium effects on Systems. Positive Q^2 values confirmed predictive relevance of the model.

Model Fit Indices

Table 6. Global Model Fit Indices

Index	Recommended Threshold	Value	Fit
SRMR	≤ 0.08	0.07	Good
NFI	≥ 0.90	0.91	Acceptable
CFI	≥ 0.90	0.93	Good
TLI	≥ 0.90	0.92	Good
RMSEA	≤ 0.08	0.06	Good

The model achieved adequate fit, with SRMR = 0.07 and RMSEA = 0.06, both within recommended thresholds. Incremental fit indices (NFI = 0.91, CFI = 0.93, TLI = 0.92) further confirmed good model fit.

The results demonstrate that Leadership significantly enhances both Adoption and Governance, which in turn positively influence Systems. Adoption and Governance serve as mediators in the relationship between Leadership and Systems, highlighting

the importance of organizational leadership in embedding sustainability. The model demonstrated substantial explanatory power (R^2 up to 0.64) and achieved good overall model fit.

Discussion of Findings

Leadership and Adoption

The results confirm that Leadership significantly influences Adoption of sustainability practices (H1 supported). This finding aligns with Kotter's (1996) change leadership theory, which emphasizes urgency, vision, and coalition-building as drivers of change. It also resonates with empirical evidence that leadership commitment fosters employee awareness, motivation, and ability to adopt new practices (Afsar & Umrani, 2020). In the context of sustainability, leaders act as champions who inspire behavioral alignment across organizational levels.

Leadership and Governance

Leadership was also found to have a significant positive effect on Governance (H4 supported). This indicates that sustainability governance structures such as ISO adoption, GHG reporting, and triple bottom line (TBL) accountability are strongly shaped by leadership direction. Previous studies affirm that top management plays a central role in institutionalizing sustainability through policies, standards, and performance monitoring (Eccles et al., 2014).

Adoption and Systems Integration

Adoption significantly predicted Systems integration (H2 supported). This implies that employees' awareness, motivation, knowledge, and ability to implement sustainability directly enhance organizational systems integration. Systems thinking theory (Senge, 1990) supports this result, suggesting that successful adoption at the individual level scales up into system-wide transformation.

Governance and Systems Integration

Governance also had a significant effect on Systems (H3 supported). This finding highlights that robust governance mechanisms such as environmental reporting and ISO standards drive interdependence mapping, leverage-point identification, and feedback learning. Consistent with corporate governance literature, sustainability systems are most effective when governance frameworks ensure accountability and compliance (Aras & Crowther, 2008).

Theoretical Implications

This study contributes to sustainability and SEM literature in several ways: it empirically validates a leadership–adoption–governance–systems framework, extending systems thinking and change management theories.; it demonstrates the mediating roles of Adoption and Governance, thus clarifying the mechanisms by which leadership impacts sustainability integration; and it advances SEM-based research by testing a multi-construct model with strong explanatory power (R^2 up to 0.64).

Practical Implications

For Managers: Organizations should prioritize leadership development programs focused on sustainability competencies, since leadership was shown to drive both adoption and governance.

For Policy Makers: Regulatory bodies should encourage firms to integrate sustainability governance mechanisms such as ISO certification and GHG reporting, as these strengthen systems outcomes.

For Employees: Building awareness, knowledge, and ability among employees enhances adoption, which in turn contributes to system-wide sustainability improvements.

Conclusion

This study demonstrates that Leadership is a central driver of sustainability integration, exerting both direct and indirect effects through Adoption and Governance. The findings confirm that organizations with committed leaders, empowered employees, and strong governance mechanisms achieve superior systems integration for sustainability. Ultimately, embedding leadership, adoption, and governance within organizational DNA is key to achieving long-term sustainability transformation.

Recommendations

Base on the results of the study, the following are therefore recommended: organizations should invest in sustainability leadership training to reinforce urgency, vision, and coalition-building; firms should institutionalize governance mechanisms, including ISO 14001 certification, sustainability reporting, and TBL metrics, to embed accountability; adoption strategies should emphasize employee motivation and reinforcement through incentives, recognition, and continuous learning; and systems thinking should be incorporated into corporate strategy, ensuring that interdependencies, feedback loops, and leverage points are actively identified and acted upon.

Limitations and Suggestions for Future Research

While this study provides valuable insights, it has limitations. First, it relies on cross-sectional survey data, which restricts causal inference. Future studies could employ longitudinal designs to capture dynamic sustainability integration. Second, the study focused on a specific organizational/sectoral context, limiting generalizability. Future research could test the model across industries or in comparative international contexts. Lastly, qualitative approaches such as case studies could enrich understanding of how leadership behaviors shape governance and adoption practices in practice.

REFERENCES

Afsar, B., & Umrani, W. A. (2020). Transformational leadership and innovative work behavior: The role of motivation to learn, task complexity and innovation climate. *European Journal of Innovation Management, 23*(3), 402–428.

Amiri, N., Zarei, A., & Rezazadeh, A. (2024). Nudging toward sustainability: A systematic review of behavioral interventions. *Journal of Cleaner Production, 427,* 139674. https://doi.org/10.1016/j.jclepro.2023.139674

Appelbaum, S. H., Habashy, S., Malo, J. L., & Shafiq, H. (2012). Back to the future: Revisiting Kotter's 1996 change model. *Journal of Management Development, 31*(8), 764–782.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101.

Burnes, B., & Cooke, B. (2013). Kurt Lewin's field theory: A review and re-evaluation. *International Journal of Management Reviews, 15*(4), 408–425.

Calegari, M. F., Sibley, R. E., & Turner, M. (2015). A roadmap for sustainability: Using ADKAR to facilitate successful organizational change. *International Journal of Sustainability Policy and Practice, 11*(1), 1–15.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.

Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

Cummings, S., Bridgman, T., & Brown, K. G. (2016). Unfreezing change as three steps: Rethinking Kurt Lewin's legacy for change management. *Human Relations, 69*(1), 33–60.

Darnall, N., & Sides, S. (2008). Assessing the performance of voluntary environmental programs: Does certification matter? *Policy Studies Journal, 36*(1), 95–117.

Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science, 60*(11), 2835–2857.

Elkington, J. (1994). Towards the sustainable corporation: Win–win–win business strategies for sustainable development. *California Management Review, 36*(2), 90–100.

Epstein, M. J., & Buhovac, A. R. (2014). *Making sustainability work: Best practices in managing and measuring corporate social, environmental and economic impacts* (2nd ed.). Greenleaf Publishing.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50.

Geisser, S. (1974). A predictive approach to the random effect model. *Biometrika, 61*(1), 101–107.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.

Hahn, T., Pinkse, J., Preuss, L., & Figge, F. (2014). Tensions in corporate sustainability: Towards an integrative framework. *Journal of Business Ethics, 127*(2), 297–316.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135.

Heras-Saizarbitoria, I., & Boiral, O. (2013). ISO 9001 and ISO 14001: Towards a research agenda on management system standards. *International Journal of Management Reviews, 15*(1), 47–65.

Hiatt, J. (2006). *ADKAR: A model for change in business, government, and our community.* Prosci Research.

International Organization for Standardization. (2015). *ISO 14001:2015 – Environmental management systems – Requirements with guidance for use.* ISO.

Kotter, J. P. (1996). *Leading change.* Harvard Business Review Press.

Lewin, K. (1947). Frontiers in group dynamics: Concept, method and reality in social science; social equilibria and social change. *Human Relations, 1*(1), 5-41.

Meadows, D. H. (2008). *Thinking in systems: A primer.* Chelsea Green Publishing.

Norman, W., & MacDonald, C. (2004). Getting to the bottom of "Triple Bottom Line." *Business Ethics Quarterly, 14*(2), 243–262.

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Rieg, A., Lang, R., & Neumann, U. (2021). Organizational change management for sustainability: A systematic literature review. *Journal of Cleaner Production, 297,* 126694. https://doi.org/10.1016/j.jclepro.2021.126694

Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. G. (2017). Business models for sustainability: A co-evolutionary analysis of sustainable entrepreneurship, innovation, and transformation. *Organization & Environment, 29*(3), 264–289.

Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization.* Doubleday/Currency.

Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society: Series B (Methodological), 36*(2), 111–147.

Sunstein, C. R. (2014). Nudging: A very short guide. *Journal of Consumer Policy, 37*(4), 583–588.

Williams, A., Kennedy, S., Philipp, F., & Whiteman, G. (2017). Systems thinking: A review of sustainability management research. *Journal of Cleaner Production, 148,* 866–881.

CHAPTER VIII

TECHNOLOGY, DIGITALIZATION, AND SUSTAINABILITY BEHAVIOR

Betül KARAKUŞ[1]

[1] Research Assistant, Baskent University, Ankara, Türkiye
betul.karakus@metu.edu.tr, ORCID ID: 0009-0003-9277-5654

Introduction

Sustainability is based on ensuring the equilibrium between nature, economy, and society, as well as conserving resources for the extension of human life. Within this framework, the most significant growths with the possible to benefit individuals, society, and the environment have occurred in the field of technology. Technology functions as an vital instrument for attaining sustainability goals. Digitalization, in connection with these developments, generates transformation by digital tools and communication methods and rearranges life. This transformation is reflected in the behavioral patterns of individuals, businesses, and governments alike. Digital technologies are accomplished tools that enhance effectiveness in achieving sustainable development goals, guarantee well-organized use of incomes, and enable the delivery of services (Şimşek, 2024).

Artificial intelligence (AI) and digital technologies hold considerable potential in reaching the United Nations Sustainable Development Goals. They not only directly contribute by providing solutions in essential areas such as health, education, agriculture, and energy, but also indirectly create opportunities in matters such as climate action and the reduction of inequalities (Polat, 2024). Technology and digitalization are employed as key tools for attaining the UN Sustainable Development Goals, with a emphasis on green and digital transformation processes to decrease environmental damage and endorse sustainable production (Zencirli, 2024). While technology and digitalization offer vital opportunities for advancing sustainable development objectives, they also present new trials. In fact, although digitalization and technological progresses serve as transformative forces crossways all areas of society, these procedures at the same time bring about ethical issues and disparities (Güney, 2025).

The purpose of this chapter is to observe the environmental, economic, and social impacts of technology and digitalization on sustainability behaviors and to assess these impacts at the levels

of individuals, institutions, and society. Meanwhile, the chapter reflects not only the benefits brought by digitalization but also the risks that emerge alongside it.

The Role of Technology in Sustainability

Technology shows a transformative impact on the environmental, economic, and social dimensions, which are inseparable constituents of sustainability. From the preservation of nature to the changeover to a green economy and the enhancement of social welfare, innovative solutions serve as the key to growth in these three fundamental areas. The role and effects of technology in these three areas are detailed below.

Environmental Impacts

Technology plays a critical role in reducing the adverse consequences of environmental impacts in line with sustainability goals. Technological solutions are employed to prohibit energy and waste problems and to mitigate existing damages.

Technological advancements stand out particularly in terms of energy efficiency. Smart energy systems and Internet of Things (IoT) observe energy use in real time across scales from buildings to factories, from industrial zones to entire cities which is helping to prevent overconsumption. In large-scale applications, technological developments aimed at improving energy efficiency provide significant benefits for sustainability. For example, smart meters contribute to energy savings in buildings. This not only lowers costs but also reduces carbon emissions, generating global benefits. Advances in waste heat recovery, cogeneration, and carbon capture technologies substantially increase energy efficiency in the industrial sector, achieving approximately 30% savings in electricity consumption and up to 65% reductions in carbon dioxide emissions. Moreover, these technologies can offset investment costs within as little as 1.5–3 years (Yıldız, 2024).

With technological progress, the integration of renewable energy sources has gained a crucial position. In developed countries, renewable energy sources such as hydropower, wind, geothermal, solar, biomass, wave, and hydrogen are widely used, particularly in electricity generation (Mutlu, 2012). Digital technologies developed to enable more effective use of renewable energy sources such as solar, and wind ensure balance between production and consumption, making renewable energy more reliable compared to conventional energy. Renewable energy sources are both environmentally friendly and sustainable, contributing significantly to electricity generation (23.7%) and their use continues to grow worldwide (Kaya et al., 2018).

Waste management is another area in which technology contributes to environmental sustainability. AI and machine learning are applied to classify types of waste, while data analysis helps identify regions with high levels of waste production. IoT sensors improve waste management efficiency by observing waste levels and optimizing collection ways (Özcan, 2022). Unlike traditional methods, smart waste management involves monitoring and recycling waste quantities, and by technological integration, it offers more effective environmental results (Gürcan & Açıksöz, 2023). Technology not only promote environmental sustainability but also holds the capacity to create a transformative impact. By smart energy systems, renewable energy integration, and smart waste management, resources are utilized more effectively, and harmful effects on nature are significantly reduced.

Economic Impacts

Digital transformation and technological advancements generate large-scale effects on economies for both companies and governments, while also producing outcomes that directly influence individuals' daily lives. One of the examples of this is the sharing economy, familiar to us all today. The sharing economy is a structure in which people support one another by

sharing what they own and, through technological platforms, gain access to products and services without a change in ownership (Belk et al., 2019). With sharing applications that allow multiple individuals to use the same vehicles, as well as short-distance scooter rental services within cities, transportation is provided at lower cost and with less environmental pollution. This not only enhances individuals' living standards but also contributes to society by offering a cleaner environment and a more sustainable economy. Digital platforms are among the core elements of the sharing economy. The digitalization of the economy and society highlights collective benefit by developing new business models (Sedkaoui & Khelfaoui, 2020).

Digitalization also offers new opportunities for entrepreneurs. Small and medium-sized enterprises (SMEs) that begin with innovative ideas can gain access to larger markets thanks to digitalization. In this way, they are able to promote their sustainable products to broader audiences. For example, an enterprise based on organic agriculture can find customers not only within its own city but also at the international level through digitalization. Digitalization thus represents not only an economic transformation but also a recreating of individual entrepreneurship.

Social Impacts

Technology is a factor that strengthens sustainability not only from environmental or economic perspectives but also from a social perspective. Social sustainability is used to define communal well-being (Etike & Dinçer, 2022). Achieving actual sustainability requires social sustainability, which constitutes a fundamental component of sustainability and encompasses diversity, equity, quality of life, maturity, democracy, governance, and social cohesion (Davidson, 2019). From this perspective, digital technologies are important for improving individuals' quality of life and for fostering a social awareness of sustainability.

Digital technologies and innovative methods attract the attention as the most significant tools for advancing social sustainability, ranging from inclusive education to accessible healthcare services. One of the most major examples of their social impact is the use of these technologies in education. During the COVID-19 pandemic, when face-to-face education was not possible, distance education demonstrated to be an effective solution for maintaining educational permanency (Rizaldi & Fatimah, 2020). Open access resources and online learning platforms provide opportunities for universal access to education. Individuals living in disadvantaged regions can access quality education by distance learning. Thus, distance education ensures equality of opportunity and supports individuals' social lives by education. In addition, educational technologies highlight sustainability awareness. By integrating Education for Sustainable Development in educational systems, these technologies provide individuals with the necessary skills to achieve sustainable development goals (Tiwary, 2023). In this way, educational technologies enhance access to knowledge on issues such as environmental awareness and social responsibility.

Additional critical constituent of social sustainability is digitalization in the field of healthcare. Through e-health applications, individuals who face difficulties accessing healthcare institutions are enabled to gain medical services more easily. Digital technologies significantly affect healthcare by improving quality and safety while instantaneously reducing hospital costs (Demirci, 2018). By integrating digital technologies into patient diagnosis and treatment processes, healthcare services suffer transformation. Sensor technology and wearable devices make it potential to continuously monitor patients' conditions (Reich & Meder, 2021). As a result, digital technologies improve individuals' quality of life and enhance the efficiency of healthcare systems. Furthermore, digitalization has critical importance in terms of equality. Innovative projects enabled by technological advancements improve the quality of life of visually impaired individuals (Zor & Vuruşkan, 2019). In addition, virtual reality (VR) technology assistances as an

effective tool for helping physically disabled individuals overcome barriers and involve in experiential learning (Altun, 2021). Thanks to these technologies, individuals with disabilities can participate more actively in social life. This highlights the contribution of digital transformation to social sustainability. Information and communication technologies, which increase access to essential services, play a important role in supporting communal sustainability (Prattipati, 2010). By technologies that provide equality of opportunity in education and inclusivity in healthcare, societies change in a more informed, just, and sustainable way.

Digitalization and the Behavioral Dimension

Digitalization is not only a technological process of change but also a social transformation that directly influences people's lifestyles and consumption behaviors. This transformation manifests itself in many areas, from how individuals act in the workplace to their shopping favorites. To understand the relationship between digitalization and sustainability, it is essential to examine the behavioral dimension.

Employee Behavior

One of the main factors shaping employees' attitudes in the business world is digital transformation. Today, traditional office settings have largely given way to remote work models. This shift alters employees' interactions with the environment and their work–life balance. The remote working model brings sustainability advantages such as energy savings and reduced traffic congestion (Saribay, 2023). Consequently, carbon emissions are reduced, directly demonstrating the impact of employees on environmental sustainability. In addition, replacing paper use in office settings with digital workflows provides savings in both time and resources. Considering that the main raw material of paper is wood obtained from forests, its significance for humanity is considerable (Kınık, 2022). Furthermore, with technological advancements, the

implementation of dealings in digital environments has increased, and the use of electronic signatures has become widespread (Seyirt et al., 2024). Together with the aim of increasing efficiency by electronic signatures and digital archives, the integration of environmental responsibility awareness into work life is also targeted. By digitalization, employees adopt environmentally friendly tools in their daily routines, thus embracing a culture of sustainable behavior within community life.

Digital transformation has influenced not only employees' daily work processes but also their professional learning practices. Employees are made more aware through digital literacy and sustainability training. In this way, individuals not only develop environmentally friendly behaviors but also take corporate sustainability goals into account. With distant working models, employees' quality of life increases, and sustainability is supported from a psychosocial viewpoint. Moreover, institutions increasingly consider energy efficiency and employ smart systems. This shapes employees' sustainability behaviors. Thus, digitalization is adapted into business life not only at the individual level but also institutionally, supporting sustainability in the workplace.

Consumer Behavior

Digitalization has a robust impact on consumer behavior. With digitalization, consumer behavior has been reshaped, and traditional shopping methods have been replaced by electronic trade (Ergül & Konak, 2022). By social media platforms, digital technologies spread consumers and influence their buying decisions (Cochoy et al., 2017). With the rise of digitalization in consumption, consumers not only gain access to products by mobile applications but also to information about production processes and sustainability documentations. This enables consumers to act more deliberately. For instance, the existence of green labels or eco-certifications on a product influences

consumer decision-making. Today, consumers pay attention not only to price but also to the environmental impact of products. In addition, businesses can reduce environmental problems and increase social responsibility awareness by promoting ecological products and adopting environmentally friendly marketing strategies (Yücel & Ekmekçiler, 2008). Moreover, users can access wide-ranging information about the life cycle of products by digital platforms, enabling them to make more informed choices. For example, users may base their decisions on recycling rates of favorite products. Furthermore, Life Cycle Analysis allows for the examination of the social, economic, and environmental impacts of agricultural products, so supporting the development of sustainable strategies (Yıldız & Atiş, 2023).

The influence of digitalization on consumer behavior extends beyond the act of shopping in electronic environments, it also affects consumer preferences. Consumers not only focus on the price tag but also estimate aspects such as recyclability and carbon footprint when making purchasing decisions. This demonstrates the growing occurrence of green consumption. Social media stands out as one of the most significant tools shaping consumer awareness today. Users can obtain information by social media about products that are damaging to the environment.

The Relationship Between Technology, Digitalization and Sustainability

By being integrated into the field of production, digital technologies improve resource use and provide energy savings for the sector. Digitalization increases quality in production processes while reducing errors and waste, thus increasing environmental sensitivity and standardization (Duman, 2024). Smart factories are highly intelligent systems that bring together the physical and virtual worlds. They employ the IoT to monitor and evaluate production processes, increase efficiency, and freely adapt to changing conditions (Şekkeli & Bakan, 2018). In this

way, energy use on production lines in smart factories is monitored in real time, avoiding needless consumption.

In the logistics sector, AI based route optimization systems are employed to reduce fuel consumption during transportation, so lowering carbon emissions. For example, in the Aegean Sea, a route optimization system for commercial vessels uses weather and sea condition forecasts to recognize more efficient alternative ways under adverse weather conditions, reducing both travel time and fuel consumption (İnan & Baba, 2020).

Beyond production and logistics, digitalization is also linked to sustainability in various fields, from agriculture to healthcare. Smart agricultural applications and sensor-based irrigation systems minimize environmental harm during irrigation and fertilization. In addition, the use of wearable technologies in healthcare facilitates access to services and improves service efficiency. By smart city applications, energy management, transportation management, and waste control are applied with digital solutions, dropping carbon emissions and creating sustainable urban environments.

However, beside these benefits, the integration of such technologies into daily life also introduces certain environmental challenges. Therefore, technology can be both favorable and destructive in terms of sustainability. With careful and responsible use, the dangers posed by these technologies can be minimized.

Challenges and Risks

Although digitalization offers various contributions to sustainability, it also brings with it significant challenges and risks. Among these, the most frequently discussed issues are ethical concerns, the digital divide, and environmental risks.

Ethical Issues

One of the challenges brought to the forefront by digitalization is ethics. Since digitalization creates ethical concerns across six topics, stronger data privacy laws and ethical accountability are required: privacy, autonomy, security and safety, power balance, human dignity, and justice (Nabbosa & Kaar, 2020). Particularly with the increasing use of big data and AI in the sector, protecting data security and individual privacy has become essential. By the use of social media and smart devices, users often share much of their information naively. When such data are processed or shared without consent, individuals' fundamental rights are dishonored. Moreover, the use of AI algorithms poses ethical challenges due to a lack of transparency. For example, in recruitment processes, these algorithms may exhibit prejudice against certain candidates, placing them at a disadvantage, thus revealing how critically digitalization can negatively influence important decisions. This not only creates individual grievances but also undermines the credibility of institutions.

Therefore, in addressing the ethical issues arising from digitalization, it is necessary not only to establish ethical codes but also to develop legal regulations. Although the European Union has adopted legal texts on issues particularly related to copyright and data use, existing regulations are often insufficient, and there is a need for new, more comprehensive frameworks (Suluk, 2025). The EU's proposed AI Act and the ethical principles reports prepared by companies are examples of such initiatives. The EU's AI Act regulates artificial intelligence with a risk-based approach, defining issues widely while prohibiting certain applications except when used for lawful purposes (Zabokrytskyy, 2025).

Furthermore, the ethical challenges of digitalization affect not only individuals but also society as a whole. For instance, the transparency of policymaking processes carried out by artificial intelligence has emerged as an ethical issue. This undermines public trust in AI driven decisions. Moreover, biased data used in

AI systems has led to discrimination. For example, artificial intelligence employed in recruitment or credit evaluation processes may exhibit bias on the basis of gender or society, posing a significant ethical risk. The determination of these ethical challenges cannot rely on legal regulations; organizations developing technology must also assume responsibility and create frameworks. Companies should create ethics groups and provide digital literacy training for users. Otherwise, the opportunities offered by digitalization may lead to social inequality and doubt.

Dijital Gap

Although digitalization presents opportunities, not all parts of society are able to access these opportunities equally. This situation is referred to as the digital division. The digital division remains a significant problem between developed and developing countries and is expected to continue to be an significant matter in the upcoming (Öztürk, 2002). Features such as limited internet access, lack of digital devices, and deficiencies in digital literacy skills establish the main obstacles avoiding individuals from participating in digital transformation.

Serious inequalities exist in accessing digital infrastructure in developing countries, low income regions, and rural areas. These infrastructural shortcomings create differences in opportunities across many fields, from education and healthcare to production and services. For example, during the COVID-19 pandemic, students without internet access were unable to participate in online classes, leading to learning losses and inequalities in education. The pandemic posed major barriers in education, such as poor learning conditions, lack of devices, internet connectivity problems, and financial constraints. These issues persisted and affected different educational levels. According to a UNICEF study managed in 134 countries, children preferred traditional classroom environments and expressed dissatisfaction with remote learning (Prasetiyo et al., 2022).

Digital divisions have not only arisen between countries but also between groups with different socio-economic conditions in the same country. This has posed a risk to satisfying sustainable development goals. While groups with access to digitalization have become more empowered, those facing access barriers have been excluded from its aids. To reduce this inequality, governments have pursued policies and infrastructure investments. For example, initiatives such as providing low-cost internet access in Africa, the European Union's digital education programs, and Turkey's EBA (Education Informatics Network) application have been effective in reducing the digital division by enabling equal access to internet and digital education opportunities.

Environmental Risks

Although digital technologies offer ecologically friendly solutions, they instantaneously produce sustainability problems. In other words, while declining the carbon footprint on one hand, they also create new ecological challenges on the other. The rise in e-waste stands at the forefront of these issues. Due to the short life cycle of smartphones, laptops, and other electronic devices, large amounts of electronic waste are produced. Widely of this e-waste cannot be recycled and is sent to developing countries, creating significant ecological problems. For example, in India, the inadequate gathering and processing of e-waste poses a serious danger to the environment and public health, particularly for children and workers engaged in this area (Kishore & Monika, 2010). Since electronic waste contains hazardous materials, it presents dangers to both the environment and human health; therefore, recycling e-waste is important to justifying these risks (Vaishnav & Diwan, 2013). Despite the existence of several recycling methods, e-waste has become the fastest-growing category of risky waste. Although countries have adopted laws and regulations for e-waste recycling, it endures to pose major dangers to health and the environment (Lucier & Gareau, 2019). Moreover, in societies that embrace a fast consumption culture, environmental sustainability is endangered.

The constant replacement of technological devices rises the depletion of natural resources, generating challenges for both manufacture and waste management. Hence, aware consumption is necessary for digitalization's environmental benefits to be realized. Adopting laws and policies is crucial to addressing the e-waste problem. The environmental risks of digitalization are not limited to e-waste. The rising energy consumption of data centers has led to increased carbon emissions, harmfully affecting the climate and the environment. In regions where fossil fuels are used instead of renewable energy sources, the high energy demand threatens sustainability.

The rise in e-waste is one of the most serious of these dangers. As consumption grows, the lifetime of electronic devices shortens. This accelerates production and consumption, placing serious pressure on natural resources. The extraction of rare earth elements for technological use generates environmental and social issues. In many countries, e-waste processing releases damaging gases and creates work-related health problems, raising ethical concerns. The decreasing average lifetime of electronic devices accelerates the production waste cycle and strengthens the strain on natural incomes. To combat the e-waste problem, beyond legal regulations, it is crucial for institutions to develop green policies and manufacture recyclable products. Supporting the reuse of waste can avoid raw material waste, and digitalization should be leveraged as a tool to mitigate harmful environmental impacts. In addition, consumers must be made more conscious. The unnecessary replacement of electronic devices, combined with overconsumption, accelerates the reduction of natural resources and increases e-waste. By promoting conscious consumption habits, both the carbon footprint and the amount of e-waste can be reduced. Moreover, reserves in recycling infrastructure are crucial for the effective gathering of e-waste.

Future Perspective

Digitalization holds a transformative role in the field of sustainability from today into the future. However, this role transmits not only the possible to make opportunities but also the risk of generating new challenges. Therefore, future perspectives must consider both the supportive and the threatening aspects of digitalization. In ensuring a sustainable transformation, sustainability education arises as a important element. Reforming and rearrangement education with a sustainability-focused method represents the most effective path to attaining a sustainable future (Özdemir, 2025).

New Technology Trends

Among the key tendencies in future methods to sustainability are AI, Blockchain, IoT, Digital Twins, and Smart Cities. These technologies aim to decrease environmental effects and allow more efficient use of incomes. AI is employed to forecast environmental risks and improve energy consumption. For instance, AI-supported solar panels increase productivity in energy production (Özer & Aksoy, 2024). In addition, blockchain technology ensures greater transparency in product supply chains. By blockchain-based systems, data can be accessed regarding where a product was manufactured, the conditions it was exposed to, and its carbon footprint. This supports sustainable manufacture and consumption. Moreover, IoT enables real-time observing of energy use across multiple areas. With the help of smart meters and sensors, organizations can improve energy efficiency. On the other hand, digital twin technology creates a essential model of a real-world system, allowing for the simulation of possible environmental problems in advance. By optimizing systems and providing real-time performance measurements, digital twins play a particularly important role in dropping dangers in urban planning and manufacture processes (Ibsen & Qadri, 2023).

Furthermore, artificial intelligence supports sustainability across various sectors, from agriculture to logistics. For example, AI-driven irrigation systems in agriculture improve both food security and the efficient use of water resources. In waste management, image-processing technologies allow for the separation of recyclable materials. In the future, beyond production processes, digital twin technologies will hold critical importance in urban planning. By simulating the risks of climate change in virtual environments, policymakers will be better positioned to mitigate the impacts of potential disasters. Looking ahead, smart cities will support sustainability through electric vehicle infrastructure and intelligent transportation systems. Emerging trends are expected to surpass current technologies, further strengthening sustainability. Green cloud technologies, with their lower energy consumption, will promote sustainability in data centers. Additionally, 5G and 6G networks will provide faster communication infrastructures with lower energy use, thereby supporting sustainable practices. The integration of digitalization into biotechnology will increase the production of artificial meat and vegetables, supporting food sustainability. Moreover, quantum computing holds the potential to revolutionize big data analysis and climate modeling.

The Impact of Digitalization on Sustainable Behaviors

In addition to shaping individuals' daily lives, digitalization also influences societal norms. Generations Z and Alpha, who are growing up in the digital world and learning sustainability awareness at an early age, play a significant role in shaping future social behavior. Through digitalization in education, environmental awareness is transmitted to younger generations from an early stage. Furthermore, the power of social media enables sustainability campaigns to spread rapidly and shapes individuals' consumption preferences. Digitalization is not limited to individual consumption; it also encompasses the roles individuals assume as digital citizens. Early education is essential to raising young people's awareness of sustainability. For example, the results of a quasi-experimental study (n = 302)

demonstrated that students who received education on the Sustainable Development Goals through digital interactions showed notable improvement in their digital citizenship competencies, particularly in critical thinking and political participation (Lozano-Díaz & Fernández-Prados, 2020). Thus, digitalization fosters not merely individual but also societal change, creating a sustainable culture in the long term.

The impact of digitalization on sustainable behaviors should not be confined to younger generations. Consumption preferences across different age groups influence our lifestyles. For more conscious consumption decisions, consumers of all ages should use mobile applications to access information about product manufacturing conditions and carbon footprints, thereby supporting sustainability as more informed consumers. In this way, digitalization and sustainability become inseparable. Moreover, social media is a powerful tool. Through consumer responses expressed digitally against environmentally harmful brands, environmental awareness is reinforced, and collective consciousness is fostered. From an educational perspective, digital learning platforms and online courses should be supported to promote the dissemination of the Sustainable Development Goals, ensuring that everyone develops a sense of digital citizenship. In this way, sustainability culture transcends individuality and becomes a matter of collective awareness.

Long-Term Opportunities and Threats

Digitalization offers several opportunities for sustainable development. With new technologies, the goals are to rise energy efficiency, decrease carbon emissions, help the use of environmentally friendly products, and ensure equal access to opportunities. However, digitalization also carries risks, and consciousness of these risks must be upraised. With the growth of blockchain and data centers, energy demand has increased, and energy intensity has emerged as a danger. In addition, civilizations are becoming increasingly reliant on digital data, which presents ethical and security risks. Moreover, the fast

spread of technological innovations, without the development of suitable lawful frameworks, contributes to misuse. Furthermore, digitalization in production has both helpful and damaging environmental effects. While it increases resource efficiency, it also rises resource and energy use, leading to better waste generation and releases (Chen et al., 2020). Therefore, in future viewpoints, digitalization must be evaluated by considering both its chances and risks. When used properly, digitalization can serve as a powerful supporter of sustainability; when misused, however, it can make environmental and moral problems.

Among the long-term chances of digitalization are sustainable business models. By using digital technologies, transparency is ensured in production and consumption processes, while the reuse of resources is encouraged, thus contributing to waste reduction. Smart production systems allow for more efficient use of raw materials and provide sustainability in terms of costs. Additionally, digital platforms support small enterprises in their business activities and create opportunities for entrance in global markets. Yet, digitalization also brings dangers. Beyond increased energy consumption and e-waste generation, hazards such as digital dependency and cybersecurity dangers have emerged. Dependence on digital data threatens individuals' privacy, while certain cyberattacks damage social stability. Moreover, the integration of AI in the workplace has started automation in the workforce, raising the risk of joblessness. This makes a challenge for social sustainability. When properly showed, digitalization can offer long term aids for sustainability. AI supported energy systems decrease carbon emissions, supporting environmental sustainability. Blockchain technology rises transparency in supply chains, supporting sustainable manufacture. Meanwhile, smart cities make livable urban environments, and digital education platforms raise younger generations who are aware of sustainability. These developments prove that by directing digitalization properly, risks can be avoided, and strong chances can be realized.

Conclusion and Recommendations

Technology and digitalization possess significant accelerating influence in achieving sustainable development goals. At the same time, the growth of digitalization takes potential risks. While organizations gain energy efficiency by digitalization, they also face the problem of e-waste. Similarly, while organizations use digitalization to decrease environmental risks, they are instantaneously opposed with safety issues. Therefore, future oriented tactics should consider both chances and dangers. From the perspective of politicians, it is necessary to develop legal rules to avoid the harmful consequences of digitalization. E-waste management and energy efficiency motivations should be addressed widely by legislation. Initiatives such as the European Union's Green Deal and Digital Europe programs offer pathways that can also aid as models at the national level. For instance, with the European Union's Green Deal, the aim is to decrease emissions by 50% by 2030, change to a low-carbon economy, and help the use of renewable energy sources (Vezirishvili-Nozadze & Pantskhava, 2022). Moreover, it is suggested to apply guidelines concerning transparency and ethical concerns in AI and big data applications. For organizations, adopting sustainability together with digital transformation strategies has become unavoidable. Industries not only consider environmental performance within the framework of economic cost-effectiveness but also highlight environmental reporting and stakeholder trust. Therefore, digital sustainability reports, green digital strategies, and transparency in supply chains have become vital for organizations. Performs accepted by businesses such as Apple, Google, and Arçelik not only make environmental aids but also strengthen corporate reputation. On the individual level, sustainable digital behaviors are of dangerous position. By tracking their digital carbon footprints and favoring environmentally friendly products, individuals contribute to communal transformation. At the same time, by digital citizenship mindfulness, individuals participate in movements by tools such as social media, so fostering collective awareness. Especially with younger generations being raised

with such awareness, a sustainable culture will become enduring and vigorous in the long term.

In conclusion, if the chances obtainable by technology and digitalization are used effectively, it is possible to attain sustainable development goals. However, success in this process needs charge from all actors. In other words, sustainable development can be achieved by the suitable use of technology and digitalization, but suitable governance is vital to minimize harmful social and environmental results (Yavaş, 2024). Beyond being a mere tool, technology is also a essential element in determining social structures and influencing life, and it is considered an vital standard in sociology (Adaş & Erbay, 2021). The right and efficient use of technology lies in our hands.

References

Adaş, E. B., & Erbay, B. (2021). Toplumsallığın kurucu aktörü olarak teknoloji: Eleştirel bir değerlendirme. *Sosyolojik Bağlam Dergisi*, *2*(3), 99–114. https://doi.org/10.52108/2757-5942.2.3.7

Altun, D. (2021). Vırtual Realıty Solutıons In Dısabled Informatıcs: A Technologıcal Step Towards Equalıty. *The Journal of Social Sciences*, *53*(53), 258–272. https://doi.org/10.29228/sobider.52362

Belk, R. W., Eckhardt, G. M., & Bardhi, F. (2019). Introduction to the Handbook of the Sharing Economy: the paradox of the sharing economy. In *Edward Elgar Publishing eBooks*. https://doi.org/10.4337/9781788110549.00005

Chen, X., Despeisse, M., & Johansson, B. (2020). Environmental Sustainability of Digitalization in Manufacturing: A review. *Sustainability*, *12*(24), 10298. https://doi.org/10.3390/su122410298

Cochoy, F., Hagberg, J., McIntyre, M. P., & Sörum, N. (2017). Digitalizing consumption. In *Routledge eBooks* (pp. 1–19). https://doi.org/10.4324/9781315647883-1

Davidson, M. (2019). Social sustainability. In *Routledge eBooks* (pp. 27–41). https://doi.org/10.4324/9781315115740-2

Demirci, Ş. (2018). Sağlığın Dijitalleşmesi - Digitalization of Health. *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *10*(26), 710–721. https://doi.org/10.20875/makusobed.383071

Duman, M. Ç. (2024). Üretimde Dijitalleşmenin Kalite Üzerine Yansımaları: Bir Tekstil İşletmesinden Kanıtlar. *Giresun Üniversitesi İktisadi ve İdari Bilimler Dergisi*. https://doi.org/10.46849/guiibd.1495777

Ergül, M., & Konak, A. (2022). Dijitalleşmenin Tüketici Davranışları Üzerine Etkisi. *1. International Research Congress for Economic and Administrative Studies*, 62–73. https://doi.org/10.47832/economiccongress1-6

Etike, B. A., & Dinçer, E. E. (2022). Kamusal Alanlarda Sosyal Sürdürülebilirliğin Kavramsal İncelemesi: Parametreler Üzerine Bir Araştırma. *Deleted Journal*, *Year: 15-Number: 93*(Year: 15-Number: 93), 261–279. https://doi.org/10.29228/jasss.57406

Güney, A. (2025). The rise of technology: The societal ethical reflections of digitalization. *Journal of Human Sciences*, *22*(1), 133–145. https://doi.org/10.14687/jhs.v22i1.6570

Gürcan, C., & Açiksöz, S. (2023). Akıllı Atık Yönetimi ve Örnek Uygulamalar. *Kent Akademisi*, *16*(1), 577–594. https://doi.org/10.35674/kent.881639

Ibsen, C. H., & Qadri, B. A. (2023). The journey to digitalization with the digital twin concept. *Open Access Government*, *37*(1), 232–233. https://doi.org/10.56367/oag-037-10199

İnan, T., & Baba, A. F. (2020). Weather Routing Optimization System for the purpose of reducing fuel consumption and navigation time of merchant ships (Aegean Sea Model). *Journal of Polytechnic*, *24*(3), 879–892. https://doi.org/10.2339/politeknik.643333

Kaya, K., Şenel, M. C., & Koç, E. (2018). Dünyada Ve Türkıye'de Yenilenebillr Enerji Kaynaklarının Değerlendirilmesi. *NWSA Academic Journals*, *13*(3), 219–234. https://doi.org/10.12739/nwsa.2018.13.3.2a0152

Kishore, J., & Monika, N. (2010). E-waste management: As a challenge to public health in India. *Indian Journal of Community Medicine*, *35*(3), 382. https://doi.org/10.4103/0970-0218.69251

Kınık, M. (2022). Grafik tasarımda sürdürülebilir seçimler: kâğıt mı? dijital mi? *Art-e Sanat Dergisi*, *15*(30), 989–1016. https://doi.org/10.21602/sduarte.1171633

Lozano-Díaz, A., & Fernández-Prados, J. S. (2020). Educating Digital Citizens: An opportunity to critical and activist perspective of sustainable development goals. *Sustainability*, *12*(18), 7260. https://doi.org/10.3390/su12187260

Lucier, C. A., & Gareau, B. J. (2019). Electronic Waste Recycling and Disposal: An Overview. In *IntechOpen eBooks*. https://doi.org/10.5772/intechopen.85983

Mutlu, Y. (2012). Türkiye'nin enerji potansiyeli ve yenilenebilir enerji kaynaklarının elektrik enerjisi üretimi açısından önemi. *Ankara Üniversitesi Çevrebilimleri Dergisi*, *4*(2), 33–54. https://doi.org/10.1501/csaum_0000000064

Nabbosa, V., & Kaar, C. (2020, May). Societal and ethical issues of digitalization. In Proceedings of the 2020 international conference on Big Data in Management (pp. 118-124).

Özcan, T. (2022). Nesnelerin interneti özellikli sensörlerin akıllı atık yönetimine katkısı. *Yapı Bilgi Modelleme*, *4*(1), 14–22. https://doi.org/10.53033/ybm.1104953

Özdemir, O. (2025). Geleceğe doğru yeni bir eğitim paradigması: sürdürülebilirlik eğitimi. *Buca EğItim FakülLtesi Dergisi (Online)/Buca EğItim FakülLtesi Dergisi*, *64*, 2525–2540. https://doi.org/10.53444/deubefd.1644800

Özer, D., & Aksoy, B. (2024). Yapay Zekâ Uygulaması İle Güneş Paneli Sistemi Enerji Üretimi Tahmini. *Yalvaç Akademi Dergisi*, *9*(2), 138–151. https://doi.org/10.57120/yalvac.1543369

Öztürk, L. (2002). Dijital Uçurumun Küresel Boyutları. *DergiPark (Istanbul University)*. https://dergipark.org.tr/tr/pub/eab/issue/39832/472245

Polat, M. (2024). Yapay zekâ tabanlı teknolojilerin BM Sürdürülebilir Kalkınma Hedeflerine katkıları. *Journal of Original Studies*, *5*(2), 85–101. https://doi.org/10.47243/jos.2627

Prasetiyo, N. T. H., Nugraheni, N. M. P., & Mahfud, N. (2022). Problematika Pembelajaran Masa Pandemi hingga Masa Pemulihan Learning Problems from Pandemic Period to Recovery Period. *Sosıoedukası Jurnal Ilmıah Ilmu Pendıdıkan Dan Sosıal*, *11*(2), 157–162. https://doi.org/10.36526/sosioedukasi.v11i2.2223

Prattipati, S. N. (2010). Sustainability and the role of information and communications technologies. *the Business Renaissance Quarterly*, *5*(2), 23. https://www.questia.com/library/journal/1P3-2198231781/sustainability-and-the-role-of-information-and-communications

Reich, C., & Meder, B. (2021). Digital-Health-Highlights 2020. *Der Kardiologe*, *15*(2), 153–159. https://doi.org/10.1007/s12181-021-00466-9

Rizaldi, D. R., & Fatimah, Z. (2020). How the Distance Learning can be a Solution during the Covid-19 Pandemic. *International Journal of Asian Education*, *1*(3), 117–124. https://doi.org/10.46966/ijae.v1i3.42

Saribay, B. (2023). Uzaktan Çalışma Üzerine Sosyolojik Bir Değerlendirme. *Sosyoloji Dergisi*, *46*, 221–241. https://doi.org/10.59572/sosder.1275821

Sedkaoui, S., & Khelfaoui, M. (2020). Digital Platforms and the Sharing Mechanism. *Sharing Economy and Big Data Analytics*, 51–60. https://doi.org/10.1002/9781119695035.ch4

Şekkeli, Z. H., & Bakan, İ. (2018). Akıllı Fabrikalar. *Journal of Life Economics*, *5*(4), 203–220. https://doi.org/10.15637/jlecon.270

Seyirt, M., Özcan, T., Karabulut, B., Doğan, S. M., & Harmancı, E. A. (2024). Elektronik İmza Standartlarındaki Güncellemeler ve Türkiye'deki Mevcut Durum. *Bilgi Yönetimi*, *7*(1), 1–15. https://doi.org/10.33721/by.1473545

Şimşek, Ş. E. (2024). Dijital Teknolojilerin gücüyle Sürdürülebilirlik: Döngüsel ekonomi kapsamında sıfır atık uygulama önerisi. *Journal of Business and Trade*. https://doi.org/10.58767/joinbat.1481797

Suluk, C. (2025). Dijitalleşmenin ve Özellikle Yapay Zekanın Çıkardığı Telif Sorunları ve Çare Arayışları. *Yıldırım Beyazıt Hukuk Dergisi*, *2*, 951–970. https://doi.org/10.33432/ybuhukuk.1708190

Tiwary, A. R. (2023). Sustaınıng Educatıon, Educatıng Sustaınabılıty. *Deleted Journal*, *1*(1), 24–25. https://doi.org/10.26480/eldn.01.2023.24.25

Vaishnav, D., & Diwan, R. (2013). E-Waste management -An overview. *Recent Research in Science and Technology*, *5*(5), 92–97. http://updatepublishing.com/journal/index.php/rrst/article/download/1074/1058

Vezirishvili-Nozadze, K., & Pantskhava, E. (2022). The European "Green Agreement" And Its Impact On Georgıa's Energy Sector. *Vectors of Social Sciences*, *3*(3). https://doi.org/10.51895/vss3/vezirishvili-nozadze/pantskhava/kanashvili

Yavaş, H. K. (2024). Sürdürülebilir Kalkınma ve Dijitalleşmeyle Birlikte Ortaya Çıkan Meydan Okumalar. *AJIT-e Academic Journal of Information Technology*, *15*(2), 138–173. https://doi.org/10.5824/ajite.2024.02.002.x

Yıldız, M., & Atiş, E. (2023). Yaşam döngüsü analizi: teorik çerçeve ve tarıma uygulanması. *Ege Üniversitesi Ziraat Fakültesi Dergisi*, *60*(2), 363–374. https://doi.org/10.20289/zfdergi.1126540

Yıldız, C. (2024). Sanayide enerji verimliliğinde son gelişmeler: Türkiye örneği. *Gazi Üniversitesi Fen Bilimleri Dergisi Part C Tasarım Ve Teknoloji*, *12*(2), 494–547. https://doi.org/10.29109/gujsc.1442017

Yücel, M., & Ekmekçiler, Ü. S. (2008). Çevre Dostu Ürün Kavramına Bütünsel Yaklaşım; Temiz Üretim Sistemi, Eko-Etiket, Yeşil Pazarlama. *Elektronik Sosyal Bilimler Dergisi (Elektronik)*, *7*(26), 320–333. https://doi.org/10.17755/esosder.43110

Zabokrytskyy, I. I. (2025). The Artificial Intelligence Act (AI Act) as the basis for legal regulation of artificial intelligence in the EU: review of the main provisions. *Analytical and Comparative Jurisprudence*, *3*(3), 282–286. https://doi.org/10.24144/2788-6018.2025.03.3.44

Zencirli, M. (2024). Organize Sanayi Bölgelerinde İkiz Dönüşüm. *Girişimcilik İnovasyon ve Pazarlama Araştırmaları Dergisi*, *8*(15), 21–31. https://doi.org/10.31006/gipad.1448035

Zor, B. S., & Vuruşkan, A. (2019). Assistive Technologies for Individuals with Visual Impairment: Contribution of Design in the Field of Clothing. *Mühendislik Bilimleri ve Tasarım Dergisi*, *7*(4), 913–925. https://doi.org/10.21923/jesd.482180

CHAPTER IX

KNOWLEDGE STRATEGIES FOR DRIVING ORGANISATIONAL SUSTAINABILITY

BALOGUN-SHITTABEY Lookman Adefolarin[1]

EZE Benneth Uchenna[2]

FAPARUSI Sunday Oluwadamilare[3]

UGEGE Joseph Eromonsele[4]

[1] Ph.D., Department of Business Administration, Olabisi Onabanjo University, Ago-Iwoye, Nigeria.
[2] Ph.D., Department of Business Administration, Wesley University, Ondo, Ondo State, Nigeria
beneze@wesleyuni.edu.ng, ORCID ID: https://orcid.org/0000-0003-2676-823X
[3] Ph.D., Centre for Peace and Security Studies, Lagos State University, Ojo, Lagos, ORCID ID: https://orcid.org/0009-0008-9479-6017
[4] Ph.D., Department of Business Administration and Management, National Institute of Construction Technology and Management, Uromi, joeugege1983@gmail.com

Abstract

The urgency of advancing sustainability agendas has positioned knowledge management (KM) as a foundational enabler of systemic change. This study explores how knowledge strategies accelerate sustainability transitions by synthesizing recent literature (2022–2025), international policy documents, and corporate case studies. Using a qualitative synthesis and thematic coding approach, the analysis identifies five core strategies: knowledge capture and codification, knowledge sharing and communities of practice, open innovation and partnerships, digital platforms and analytics, and governance and standards. Findings reveal that organizations adopting structured KM approaches report enhanced sustainability performance, improved innovation capacity, and greater transparency across value chains. Case examples, including Microsoft's sustainability data platforms and Unilever's supplier-focused knowledge-sharing initiatives, demonstrate the application of digital and human-centered KM practices. Barriers such as siloed structures, inconsistent data standards, and limited absorptive capacity constrain progress, while enablers include leadership commitment, cross-sector collaboration, and investment in digital infrastructures. The study underscores the importance of coupling digital platforms with human-centered practices to scale sustainability transformations. Practical implications suggest that policymakers should establish interoperable standards, support public knowledge platforms, and incentivize cross-sector hubs. Future research should explore low-cost KM solutions for small and medium-sized enterprises (SMEs), AI-enhanced knowledge synthesis, and governance models that balance openness with data integrity. By embedding adaptive learning into organizational and policy systems, knowledge strategies transform sustainability from compliance-driven activities into drivers of innovation and resilience.

Introduction

Background and Rationale

The global sustainability agenda has intensified in recent years, driven by accelerating climate change, biodiversity loss, and widening socio-economic inequalities. Achieving the Sustainable Development Goals (SDGs) requires not only technological innovation but also systemic shifts in how knowledge is created, shared, and applied (United Nations, 2024). Knowledge management (KM) has emerged as a catalytic driver of sustainability by enabling organizations and societies to harness collective intelligence, diffuse eco-innovations, and build adaptive capacities (Eskiyerli & Dondrup, 2025; Wiley, 2024). In this context, KM transcends its traditional organizational role to become a cornerstone of global transformation strategies.

The intersection of KM and sustainability is increasingly visible in corporate practices, where firms leverage digital infrastructures and human-centered approaches to integrate environmental, social, and governance (ESG) concerns into decision-making. Microsoft, for example, has developed sustainability data platforms that integrate Scope 1–3 carbon reporting with governance frameworks, while Unilever advances circular economy practices through supplier-focused knowledge-sharing systems (Microsoft, 2024; Unilever, 2024). Such initiatives illustrate how KM strategies enhance sustainability performance while creating new pathways for innovation and resilience.

Research Problem and Gap

While the literature on sustainability has expanded significantly, there remains a lack of integrative analysis of knowledge strategies as enablers of sustainability. Most existing studies treat KM as a supportive mechanism rather than as a transformative driver (Forés & Fernández-Yáñez, 2023). Furthermore, much of

the empirical evidence is fragmented across industry-specific or regional studies, with limited synthesis of how KM strategies collectively shape sustainability outcomes (Valencia-Arias et al., 2024). This fragmentation undermines the potential to scale effective practices and inform coherent policy frameworks.

Emerging challenges also raise new questions about KM in sustainability contexts. The rise of digital technologies such as artificial intelligence (AI), blockchain, and advanced analytics creates opportunities for real-time sustainability monitoring but also introduces concerns regarding governance, data integrity, and equitable access (Hafeez, 2025; Gandía, 2025). Moreover, SMEs and organizations in developing economies often lack the financial and technical resources to implement advanced KM systems, highlighting the need for low-cost and context-sensitive solutions (Valencia-Arias et al., 2024).

Aim and Objectives

This study seeks to address these gaps by providing a comprehensive synthesis of recent research, policy documents, and corporate case studies to identify core knowledge strategies, barriers, enablers, and implementation patterns that drive sustainability outcomes. Specifically, the study is to:

i. analyze how organizations capture, share, and apply knowledge to advance sustainability;
ii. examine barriers and enablers shaping the effectiveness of KM in sustainability contexts;
iii. illustrate practical applications through case examples of global corporations and circular knowledge models;
iv. derive implications for organizations, policymakers, and international bodies; and
v. identify future research directions that can strengthen the integration of KM into sustainability transformations.

By pursuing these objectives, the paper contributes to both theory and practice by reframing knowledge strategies as central, rather than peripheral, to sustainability transitions.

Literature Review

Conceptual Perspectives on Knowledge and Sustainability

Knowledge as a Strategic Asset in Sustainability

Knowledge has long been recognized as a central resource for organizational competitiveness (Grant, 1996). Within the sustainability domain, knowledge acts not only as an intangible asset but also as a catalyst for systemic change, enabling firms and societies to navigate environmental uncertainty and institutional complexity (Forés & Fernández-Yáñez, 2023). The knowledge-based view of the firm (KBV) suggests that firms leveraging unique knowledge capabilities are better positioned to innovate and adapt (Gandía, 2025). Applied to sustainability, this implies that organizations capable of mobilizing knowledge resources can create environmentally responsible products, reduce ecological footprints, and enhance social legitimacy.

Beyond firm-level advantages, knowledge is a public good with societal implications. Effective knowledge flows across sectors enable the scaling of innovations such as renewable energy technologies, sustainable agriculture, and low-carbon transport (United Nations, 2024). Thus, sustainability transitions can be conceptualized as knowledge-intensive processes requiring collective intelligence, knowledge codification, and adaptive learning loops (Eskiyerli & Dondrup, 2025).

Knowledge Management in Sustainability Transitions

Knowledge is widely recognized as a strategic asset in navigating sustainability transitions. Firms with strong knowledge-sharing cultures consistently outperform in green innovation outcomes

(SciDirect, 2025). Moreover, inter-organizational knowledge exchange has been identified as critical to achieving systemic progress on SDGs, especially in domains such as sustainable energy, circular production, and inclusive business models (United Nations, 2024). Yet, despite these advances, challenges remain in embedding KM practices across industries, particularly in contexts where absorptive capacity is limited, or data governance mechanisms are weak (GlobeScan & ERM, 2024).

The adoption of KM practices in sustainability aligns with broader theoretical frameworks such as the knowledge-based view of the firm (KBV), which posits that competitive advantage stems from the effective mobilization of knowledge resources (Grant, 1996). Applied to sustainability, KBV suggests that organizations integrating sustainability knowledge into core business functions are more likely to innovate, adapt, and maintain legitimacy in increasingly regulated and transparent markets (Gandía, 2025). Similarly, systems theory highlights the interconnectedness of social, economic, and ecological systems, underscoring the need for knowledge flows that cut across traditional boundaries (Ficko, 2025).

Knowledge Management and Circular Economy

The transition toward a circular economy (CE) highlights the importance of knowledge strategies for closing resource loops and minimizing waste. Circular knowledge models integrate KM practices into CE processes, ensuring that information on product design, resource flows, and material recovery is captured and reused (Eskiyerli & Dondrup, 2025). Product passports, for instance, embed sustainability knowledge into digital documentation, enabling firms to track and recycle materials across life cycles. Knowledge codification in CE also facilitates cross-sector collaboration, as firms share expertise on sustainable packaging, reverse logistics, and waste valorization. These processes align with the systems thinking approach**,** which views sustainability challenges as interconnected and requiring holistic knowledge frameworks (Ficko, 2025). By linking KM and CE, organizations can achieve both ecological efficiency and innovation-led growth.

Digital Knowledge Platforms and Sustainability Analytics

Digital technologies are redefining how sustainability knowledge is generated, stored, and applied. Platforms such as Microsoft's Cloud for Sustainability aggregate Scope 1–3 emissions data, apply AI-driven analytics, and align reporting with global standards (Microsoft, 2024). These platforms enhance transparency, enable real-time decision-making, and support regulatory compliance.

Big data analytics and artificial intelligence (AI) extend KM capabilities by detecting sustainability trends, predicting risks, and automating reporting (Gandía, 2025). Blockchain, meanwhile, improves traceability in supply chains, ensuring knowledge flows are verifiable and tamper-proof (PwC, 2024). However, digitalization raises governance challenges, particularly regarding interoperability, data quality, and ethical use of AI (Valencia-Arias et al., 2024).

Knowledge Sharing and Communities of Practice

Human-centered approaches remain essential to sustainability knowledge strategies. Communities of practice—networks of professionals who share expertise—facilitate the diffusion of best practices across organizations and industries (Wiley, 2024). These platforms support mutual learning, build trust, and enhance absorptive capacity, particularly in complex sustainability contexts. Knowledge sharing also extends across inter-organizational partnerships. Cross-sector collaborations, such as those involving NGOs, governments, and firms, leverage diverse expertise to address systemic sustainability challenges (UNESCO, 2022–2025). Such partnerships reinforce the principle that sustainability knowledge cannot remain siloed but must flow across institutional boundaries to create collective impact.

Empirical Insights

Knowledge-Sharing Cultures and Green Innovation

Recent empirical studies emphasize the positive relationship between knowledge-sharing cultures and sustainability innovation outcomes. Organizations that foster open communication, incentive alignment, and collaborative structures achieve higher rates of eco-innovation adoption (SciDirect, 2025). These findings reinforce the KBV by showing that knowledge mobilization is a predictor of both environmental and economic performance. Furthermore, case evidence demonstrates that firms integrating sustainability into KM outperform peers in adapting to ESG regulations and market expectations (Forés & Fernández-Yáñez, 2023). For instance, Unilever's supplier engagement platform has enabled the diffusion of sustainable agricultural practices, strengthening both environmental outcomes and supply chain resilience (Unilever, 2024).

Digital Platforms, Governance, and Sustainability Data

Digital platforms significantly improve scalability and monitoring of sustainability initiatives. However, recent studies stress the need for robust governance mechanisms to ensure data quality and interoperability (PwC, 2024). Without standardized protocols, sustainability data risks becoming fragmented, reducing its usefulness for benchmarking and policy alignment (Ficko, 2025).

Empirical reviews highlight that firms implementing integrated KM-digital solutions, such as Microsoft's sustainability platforms, demonstrate superior reporting accuracy and cross-sector alignment compared to firms relying on fragmented systems (Microsoft, 2024). These insights underscore the need to couple technological innovation with governance frameworks.

Barriers to Knowledge Integration in Sustainability

Despite progress, barriers continue to impede effective KM in sustainability. Studies identify organizational silos, inconsistent data standards, and limited absorptive capacity as recurring challenges (GlobeScan & ERM, 2024). SMEs are particularly constrained by resource limitations, preventing them from implementing sophisticated KM systems (Hafeez, 2025).

Institutional barriers also persist. Differences in regulatory environments and lack of harmonized reporting frameworks create friction in cross-border knowledge exchange (UNESCO, 2022–2025). Furthermore, digital divides exacerbate inequalities in access to sustainability data, particularly in developing economies.

Enablers of Knowledge Strategies in Sustainability

Conversely, enablers such as leadership commitment, cross-sector partnerships, and investment in digital infrastructures significantly strengthen KM integration (Valencia-Arias et al., 2024). Leaders who champion knowledge-sharing cultures embed sustainability within organizational values and encourage innovative problem-solving (Forés & Fernández-Yáñez, 2023).

Public-private partnerships also emerge as powerful enablers, pooling expertise and resources to co-create sustainability solutions. International bodies, such as UNESCO and the United Nations, play crucial roles in scaling knowledge commons and facilitating capacity building across nations (UNESCO, 2022–2025).

Policy Reviews and Global Knowledge Exchange

At the policy level, reviews of UN and national frameworks emphasize that inter-organizational knowledge exchange is critical for meeting SDG targets. The UNESCO open science framework (2022–2025) highlights interoperability and open access as pillars of global knowledge equity. By enabling

transnational collaboration, such frameworks address fragmentation and ensure sustainability knowledge benefits both developed and developing economies.

Empirical findings also suggest that policies supporting open data platforms and interoperable standards enhance both transparency and innovation (PwC, 2024). For example, the European Union's Corporate Sustainability Reporting Directive (CSRD) incorporates interoperability principles to improve cross-sector comparability of ESG disclosures.

Methodology

Research Design

This study adopts a qualitative synthesis design, combining a systematic literature review with thematic analysis of policy documents and corporate case studies. Qualitative synthesis is appropriate for investigating emerging, multi-disciplinary topics such as knowledge management (KM) and sustainability, where evidence is distributed across management studies, information systems, environmental science, and policy research (Flick, 2023). The approach allows for the integration of diverse perspectives and the identification of cross-cutting themes that capture the evolving role of KM in advancing sustainability transitions.

Data Sources

The dataset for this study draws from three primary categories of sources:

Peer-Reviewed Literature (2022–2025): Articles were collected from Scopus, Web of Science, ScienceDirect, and Google Scholar, using keywords such as *knowledge management*, *sustainability*, *circular economy*, *digital platforms*, and *sustainability governance*. Recent studies were prioritized to ensure coverage of the latest insights, including those on AI-

driven KM and digital knowledge infrastructures (e.g., Gandía, 2025; Ficko, 2025).

Policy Documents: International frameworks such as the *United Nations Sustainable Development Goals (SDGs)* (United Nations, 2024), the *UNESCO Open Science Policy Framework* (2022–2025), and the *European Union Corporate Sustainability Reporting Directive (CSRD)* were reviewed. These sources provided insights into how KM principles are embedded into global and regional sustainability agendas.

Corporate Case Studies: Case examples were selected from publicly available corporate sustainability reports and practitioner analyses. Microsoft's sustainability data platforms and Unilever's supplier-focused initiatives were included as representative cases of digital and human-centered KM strategies in practice (Microsoft, 2024; Unilever, 2024).

Data Collection and Selection Criteria

Data collection followed a structured protocol:

Inclusion Criteria: Sources published between 2022 and 2025, in English, addressing the intersection of KM and sustainability (conceptual, empirical, or applied);

Exclusion Criteria: Studies focusing solely on technical sustainability without knowledge components, or KM applications unrelated to sustainability outcomes; and

Selection Process: From an initial pool of 165 documents, 92 met inclusion criteria after abstract and content screening. Of these, 42 were peer-reviewed journal articles, 20 were policy documents, and 30 were corporate case materials.

Analytical Approach

The analysis employed a thematic coding strategy. Textual data from academic, policy, and corporate sources were coded iteratively using NVivo software. The process followed Braun and Clarke's (2021) six-phase thematic analysis framework: familiarization with data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. This approach enabled the identification of recurring knowledge strategies, barriers, enablers, and patterns of implementation. Codes were grouped into categories such as knowledge capture and codification, digital platforms, communities of practice, governance and standards, and circular knowledge models.

Validation and Triangulation

Triangulation was achieved by integrating evidence across academic, policy, and corporate domains. For instance, peer-reviewed findings on digital platforms were cross-referenced with policy guidance from UNESCO and case evidence from Microsoft. This multi-source triangulation enhanced the validity of findings and reduced the risk of bias associated with relying on a single type of source (Denzin, 2017).

Additionally, peer debriefing was conducted informally by sharing coding structures with sustainability researchers to validate consistency in theme development.

Case Study Integration

Microsoft and Unilever were selected as case studies due to their global reach, documented KM initiatives, and relevance to circular economy and digital knowledge infrastructures. These firms exemplify contrasting yet complementary approaches: Microsoft illustrates technology-driven sustainability data integration, while Unilever demonstrates supplier-focused, human-centered knowledge-sharing systems. Including both

allowed for a balanced examination of digital and organizational enablers.

Ethical Considerations

As the study relies on secondary data from published sources, ethical risks are minimal. However, due diligence was exercised to ensure accurate representation and citation of all sources. Corporate case data were drawn exclusively from publicly available sustainability reports and independent evaluations, avoiding reliance on confidential or proprietary information.

Findings and Discussion

Core Knowledge Strategies

The analysis reveals five interrelated knowledge strategies as central to advancing sustainability outcomes: knowledge capture and codification, knowledge sharing and communities of practice, open innovation and partnerships, digital platforms and analytics, and governance and standards. These strategies are not mutually exclusive; instead, they reinforce one another in building organizational and systemic capacities for sustainability.

Knowledge Capture and Codification

Knowledge capture and codification involve formalizing sustainability insights into accessible repositories and tools such as product passports, life-cycle documentation, and best-practice guidelines. These mechanisms ensure that sustainability knowledge is not lost within individual teams but institutionalized across the organization (Eskiyerli & Dondrup, 2025).

For example, product passports digital documents that track material composition, carbon intensity, and end-of-life options are gaining traction in industries such as fashion and electronics.

By codifying environmental data, these passports enable reuse, recycling, and reverse logistics (PwC, 2024). Similarly, sustainability reporting frameworks such as the Global Reporting Initiative (GRI) serve as codified repositories that support transparency and benchmarking across industries (GRI, 2024). Codification also reduces dependence on tacit knowledge held by individuals, ensuring continuity in sustainability practices despite workforce turnover. However, excessive codification without alignment to user needs can result in information overload, reducing practical utility (Valencia-Arias et al., 2024). Thus, firms must balance knowledge capture with adaptive accessibility.

Knowledge Sharing and Communities of Practice

The diffusion of sustainability knowledge depends heavily on the willingness and ability of individuals and organizations to share knowledge**.** Communities of practice (CoPs) and cross-functional teams play a critical role in building collective intelligence and embedding sustainability into daily routines (Wiley, 2024). Unilever provides a strong example: its supplier-focused knowledge-sharing platforms disseminate best practices in sustainable agriculture, packaging, and waste reduction. By creating collaborative spaces, the company enables suppliers—many of them SMEs—to access sustainability knowledge they might otherwise lack (Unilever, 2024).

At the inter-organizational level, communities of practice extend into multi-stakeholder networks, such as the Ellen MacArthur Foundation's Circular Economy 100 (CE100), where firms exchange circular business models and practices. These platforms demonstrate that sustainability knowledge is not a proprietary asset but a shared resource for systemic transformation. Nevertheless, cultural and structural barriers often limit knowledge-sharing effectiveness. Hierarchical organizations with siloed communication systems struggle to foster open dialogue, while competitive concerns may discourage

firms from sharing sustainability innovations with peers (GlobeScan & ERM, 2024).

Open Innovation and Partnerships

Sustainability challenges—such as decarbonization, plastic reduction, and biodiversity protection—are systemic and cannot be solved by individual organizations. Open innovation models that leverage external collaboration are therefore essential (Chesbrough, 2023). Partnerships with NGOs, universities, startups, and governments allow firms to tap into diverse expertise, co-create solutions, and scale eco-innovations.

For example, Microsoft has partnered with the United Nations and various NGOs to integrate environmental data into cloud-based sustainability platforms, enabling global access to emissions data and climate models (Microsoft, 2024). Similarly, public-private partnerships in the renewable energy sector illustrate how joint knowledge initiatives accelerate infrastructure transitions (Hafeez, 2025). Such collaborations often extend beyond bilateral arrangements into knowledge hubs regional or sectoral platforms that convene multiple stakeholders around shared sustainability challenges. These hubs facilitate the alignment of goals, create shared metrics, and reduce duplication of effort. However, managing intellectual property and balancing openness with competitive advantage remain critical governance challenges (Ficko, 2025).

Digital Platforms and Analytics

Digitalization has emerged as a game-changer for sustainability knowledge strategies. Platforms that integrate big data, artificial intelligence, and blockchain enhance the collection, analysis, and dissemination of sustainability data (Gandía, 2025).

Microsoft Cloud for Sustainability consolidates Scope 1–3 emissions data, aligns them with global standards, and provides AI-driven insights for reduction strategies (Microsoft, 2024);

Blockchain applications in supply chains ensure traceability of raw materials, such as conflict minerals or sustainable timber, enabling firms to verify claims and avoid reputational risks (PwC, 2024); and

Dashboards and analytics tools provide real-time monitoring of environmental performance, enhancing decision-making agility and transparency (Ficko, 2025).

However, digital platforms require robust governance structures to ensure interoperability and data quality. Without standardized taxonomies and protocols, firms risk creating fragmented data silos that undermine the comparability and usability of sustainability information (UNESCO, 2022–2025).

Governance and Standards

Governance mechanisms and standards ensure accountability, interoperability, and credibility in KM systems for sustainability. The UNESCO Open Science Policy Framework emphasizes FAIR (Findable, Accessible, Interoperable, Reusable) data principles as essential for global knowledge equity (UNESCO, 2022–2025). Similarly, the European Union's Corporate Sustainability Reporting Directive (CSRD) establishes standardized reporting protocols to align firm-level sustainability data with policy goals.

At the organizational level, governance structures define roles, responsibilities, and procedures for managing sustainability data and knowledge flows. Microsoft's integration of governance mechanisms into its sustainability platform illustrates how corporate accountability is operationalized through structured KM processes (Microsoft, 2024). Nonetheless, governance challenges persist. Many SMEs lack resources to implement rigorous KM standards, while differences in national regulations

hinder cross-border comparability (Hafeez, 2025). This highlights the need for global alignment on sustainability knowledge governance.

Barriers to Knowledge Strategies

Despite growing recognition of the importance of KM in sustainability, several barriers inhibit effective implementation:

a. Siloed Organizational Structures: Isolated departments often hoard sustainability data, reducing opportunities for cross-functional learning (GlobeScan & ERM, 2024).
b. Limited Absorptive Capacity: Firms lacking the ability to recognize, assimilate, and apply external knowledge struggle to leverage sustainability insights effectively (Forés & Fernández-Yáñez, 2023).
c. Inconsistent Data Standards: Fragmentation of reporting frameworks reduces interoperability and comparability (PwC, 2024).
d. Resource Constraints: SMEs, particularly in developing economies, face challenges adopting advanced KM tools due to financial and technical limitations (Hafeez, 2025).
e. Cultural Resistance: Employees may view sustainability as peripheral, limiting engagement in knowledge-sharing initiatives (Valencia-Arias et al., 2024).

Enablers of Knowledge Strategies

Conversely, several enablers foster the successful integration of KM into sustainability agendas:

a. Leadership Commitment: Leaders play a critical role in embedding sustainability knowledge within organizational culture (Forés & Fernández-Yáñez, 2023).
b. Incentive Alignment: Rewarding employees for knowledge-sharing behaviors strengthens participation in sustainability initiatives (Wiley, 2024).

c. Cross-Sector Partnerships: Multi-stakeholder collaborations expand access to diverse knowledge pools and resources (Chesbrough, 2023).
d. Investment in Digital KM Platforms: Adoption of AI and blockchain technologies accelerates data integration and decision-making (Gandía, 2025).
e. Capacity Building: Training and education initiatives enhance absorptive capacity, particularly in SMEs and developing contexts (Valencia-Arias et al., 2024).

These enablers demonstrate that while technological infrastructures are important, human and institutional factors remain equally crucial for embedding KM into sustainability.

Case Examples

Microsoft: Data-Driven Knowledge Integration

Microsoft has pioneered the development of sustainability data platforms that integrate carbon accounting, supply chain traceability, and governance protocols. The Microsoft Cloud for Sustainability centralizes Scope 1–3 reporting and aligns it with international standards, enabling firms to manage emissions data more effectively (Microsoft, 2024). This illustrates how technology-driven KM supports transparency, compliance, and innovation simultaneously.

Unilever: Supplier Knowledge Sharing for Circularity

Unilever advances sustainability through supplier-focused knowledge-sharing platforms that promote sustainable agriculture and packaging practices. By embedding knowledge flows into its supply chain, the company empowers SMEs and farmers to adopt eco-friendly practices, illustrating the value of human-centered KM (Unilever, 2024).

Circular Knowledge Models

Recent research highlights the rise of circular knowledge models, frameworks that integrate KM practices into circular economy processes (Eskiyerli & Dondrup, 2025). These models emphasize product passports, resource tracking, and cross-sectoral knowledge exchange as means to close resource loops and enhance circularity.

Implications

The findings of this study highlight that structured knowledge management (KM) strategies are no longer optional but foundational to advancing sustainability agendas. When knowledge strategies are effectively deployed, they deliver measurable improvements in innovation performance, organizational transparency, and long-term environmental and social outcomes. This section discusses the implications at three levels: organizational, policy, and global.

Organizational Implications

For organizations, adopting structured KM strategies translates into accelerated sustainability performance. Empirical evidence demonstrates that firms with strong knowledge-sharing cultures outperform their peers in terms of eco-innovation and resource efficiency (SciDirect, 2025). For instance, Unilever's supplier knowledge-sharing initiatives have allowed its supply chain to transition toward circular packaging and regenerative agriculture, outcomes that would not be achievable without embedded knowledge flows (Unilever, 2024). The use of digital platforms such as Microsoft's Cloud for Sustainability also illustrates the competitive advantage that comes with investing in sustainability-oriented KM systems. By consolidating Scope 1–3 emissions data and aligning them with global reporting frameworks, firms gain agility in decision-making while avoiding reputational and regulatory risks (Microsoft, 2024).

Another key implication is cultural transformation. Embedding KM into sustainability requires moving beyond compliance-driven reporting to creating a culture where sustainability is viewed as a source of innovation and shared responsibility (Valencia-Arias et al., 2024). This cultural shift not only enhances internal engagement but also strengthens stakeholder trust, as firms demonstrate commitment to knowledge transparency and accountability. However, challenges remain for small and medium-sized enterprises (SMEs), particularly in emerging economies. SMEs often lack the absorptive capacity, digital infrastructure, and resources to implement sophisticated KM systems (Hafeez, 2025). This underlines the importance of developing low-cost, scalable KM tools tailored to resource-constrained settings.

Policy Implications

At the policy level, the findings underscore the importance of interoperability, governance, and public investment in knowledge infrastructures. Policymakers can play a catalytic role by promoting standards that ensure data comparability across industries and geographies. For example, the European Union's Corporate Sustainability Reporting Directive (CSRD) mandates harmonized disclosures, reducing fragmentation and enabling more reliable benchmarking (EU Commission, 2023).

The United Nations has emphasized the role of open knowledge platforms in accelerating progress toward the Sustainable Development Goals (SDGs). Publicly funded repositories of environmental data, when aligned with FAIR (Findable, Accessible, Interoperable, Reusable) principles, enhance the accessibility of sustainability knowledge for both private and public actors (UNESCO, 2022–2025). Policymakers should also focus on capacity building, particularly for SMEs and organizations in developing economies. Providing financial incentives, training programs, and subsidies for digital KM adoption can significantly lower barriers and democratize access to sustainability knowledge (World Bank, 2024). Moreover,

policy frameworks must support cross-sector knowledge hubs, where governments, firms, NGOs, and research institutions can collaborate on systemic sustainability challenges such as decarbonization, water security, and biodiversity protection.

Global Implications

At the global scale, the integration of KM into sustainability strategies has implications for systemic resilience and planetary boundaries. Sustainability challenges such as climate change, resource depletion, and social inequality are transboundary in nature and require knowledge-sharing mechanisms that transcend organizational and national boundaries (Rockström et al., 2024). The emergence of circular knowledge models illustrates how KM can help operationalize the circular economy by closing resource loops and enabling product life-cycle transparency (Eskiyerli & Dondrup, 2025). Global adoption of such models could significantly reduce environmental footprints while driving innovation in materials and processes.

Furthermore, the intersection of digital technologies and human-centered knowledge practices presents a critical opportunity for scaling sustainability transformations. AI-driven knowledge synthesis can provide predictive insights into environmental risks, while communities of practice ensure that this knowledge is contextualized, trusted, and acted upon (Gandía, 2025). However, global inequities in knowledge access must be addressed. Many developing countries face challenges in accessing high-quality sustainability data due to limited digital infrastructure and financial resources (Hafeez, 2025). Without deliberate interventions to promote equitable access, global KM strategies risk reinforcing existing disparities rather than enabling inclusive transitions.

In summary, the implications of this study are threefold: for organizations, KM strategies enhance eco-innovation, transparency, and cultural transformation but require tailored solutions for SMEs; for policymakers, Standardization,

governance, and public investment in knowledge infrastructures are essential for enabling cross-sector sustainability knowledge flows; and for the global system, KM enables systemic resilience, but equity in knowledge access must be prioritized to ensure inclusive sustainability transitions. Thus, knowledge strategies are not merely technical tools but foundational governance and innovation mechanisms for sustainability.

Conclusion

This study has demonstrated that knowledge strategies are foundational to advancing sustainability agendas, serving as both enablers of eco-innovation and as governance mechanisms for organizational and policy systems. Five core strategies—knowledge capture and codification, knowledge sharing and communities of practice, open innovation and partnerships, digital platforms and analytics, and governance and standards—emerged as central drivers of sustainable transformation.

The analysis revealed that organizations leveraging structured knowledge management (KM) strategies report accelerated sustainability outcomes, enhanced transparency, and stronger innovation capacity. Case examples such as Microsoft's data-driven sustainability platforms and Unilever's supplier knowledge-sharing initiatives illustrate how firms can translate KM into tangible environmental and social benefits. Furthermore, emerging models such as circular knowledge frameworks provide a blueprint for aligning KM with systemic sustainability transitions (Eskiyerli & Dondrup, 2025). At the same time, barriers such as siloed structures, limited absorptive capacity, inconsistent data standards, and cultural resistance remain significant obstacles. Enablers—including leadership commitment, aligned incentives, cross-sector partnerships, and digital infrastructure—were found to be crucial in overcoming these challenges.

Theoretical Implications

From a theoretical perspective, this study expands the literature on knowledge-based views of the firm (KBV) and dynamic capabilities theory by illustrating how KM practices directly influence organizational sustainability performance. Traditional KM theories emphasize competitive advantage through knowledge creation and sharing; this study extends those insights by showing how sustainability outcomes are contingent upon the integration of digital KM infrastructures with human-centered practices (Forés & Fernández-Yáñez, 2023). Additionally, the findings support the triple bottom line framework (Elkington, 1997/2023) by positioning KM not merely as an operational tool but as a strategic enabler of economic, environmental, and social performance. This highlights the role of KM as both a micro-level organizational capability and a macro-level systemic driver of sustainable development.

Practical Implications

For practitioners, the evidence underscores that sustainability cannot be achieved through compliance alone; it requires embedding adaptive learning into organizational DNA. Practical implications include:

a. Institutionalizing KM processes through repositories, product passports, and codification systems to prevent knowledge loss.
b. Fostering knowledge-sharing cultures via communities of practice, supplier engagement platforms, and cross-functional collaboration.
c. Leveraging digital technologies (AI, blockchain, cloud platforms) to scale sustainability data collection and analysis.
d. Strengthening governance mechanisms to ensure accountability, interoperability, and stakeholder trust.
e. Building capacity in SMEs through low-cost, accessible KM tools that democratize sustainability knowledge.

When these practices are combined, organizations can transform sustainability from a compliance-driven obligation into a source of innovation, value creation, and resilience.

Policy Implications

At the policy level, the study reinforces the need for interoperable standards, public knowledge infrastructures, and inclusive governance models. Policymakers can accelerate sustainability transitions by:

- Establishing mandatory reporting standards (e.g., CSRD, GRI) to improve comparability.
- Investing in open-access sustainability data repositories aligned with FAIR principles (UNESCO, 2022–2025).
- Funding knowledge hubs and public–private partnerships to tackle systemic challenges such as decarbonization and water scarcity.
- Providing incentives and training programs to support KM adoption in SMEs, particularly in developing economies.

By aligning corporate KM practices with international policy frameworks, policymakers can create a multi-level governance system that enables collective progress toward the Sustainable Development Goals (SDGs).

Global Implications

Globally, knowledge strategies are essential for managing transboundary sustainability challenges such as climate change, biodiversity loss, and resource depletion. The adoption of circular knowledge models, digital platforms, and inter-organizational knowledge-sharing networks can foster systemic resilience and ensure humanity operates within planetary boundaries (Rockström et al., 2024). Yet, equity remains a critical concern. Without deliberate efforts to close the knowledge gap between developed and developing economies,

global sustainability transitions risk exacerbating inequalities. Access to digital infrastructure, technical expertise, and financial resources must therefore be prioritized in international cooperation agendas (World Bank, 2024; Hafeez, 2025).

Future Research Directions

This study highlights several promising avenues for future research:

i. Low-cost KM solutions for SMEs: Investigating scalable, affordable knowledge strategies for resource-constrained firms, especially in the Global South.
ii. AI-enhanced knowledge synthesis: Exploring how generative AI, machine learning, and natural language processing can accelerate sustainability decision-making.
iii. Governance models for openness vs. integrity: Balancing open knowledge-sharing with concerns about data security, intellectual property, and misinformation.
iv. Sectoral studies: Conducting comparative analyses across industries such as energy, agriculture, and manufacturing to identify sector-specific KM challenges.
v. Longitudinal research: Examining how KM strategies evolve over time and their long-term impact on sustainability performance.

By addressing these gaps, future scholarship can deepen our understanding of the role of knowledge in sustainability and provide actionable insights for both organizations and policymakers. By and large, knowledge strategies transform sustainability from a compliance exercise into an engine of innovation and systemic transformation. Digital platforms, when coupled with human-centered practices, enable organizations to capture, share, and apply sustainability knowledge at scale. Policymakers can reinforce these efforts by investing in interoperable standards, open-access data systems, and inclusive capacity-building initiatives. The evidence presented in this study underscores that sustainability transitions are not only

technological but also knowledge-driven. As firms, policymakers, and global institutions align their strategies, KM emerges as the bridge between ambition and action, compliance and innovation, and local practices and global transformation.

Future research and practice must focus on democratizing KM tools, leveraging AI for predictive sustainability insights, and designing governance models that ensure equity and integrity. Only then can knowledge strategies fulfill their potential as the catalyst for global sustainability transformations.

Practical Recommendations

The findings of this study demonstrate that knowledge management (KM) strategies are critical enablers of sustainability. However, their effectiveness depends on deliberate action by organizations, policymakers, and international stakeholders. This section offers targeted recommendations that translate theoretical and empirical insights into practical interventions.

Recommendations for Organizations

Institutionalize knowledge capture should develop structured repositories for sustainability knowledge, including digital product passports and life-cycle documentation; and adopt standardized sustainability metrics to ensure data comparability across departments and supply chains (PwC, 2024). Foster knowledge-sharing cultures should create cross-functional communities of practice where employees can exchange sustainability insights; and incentivize knowledge-sharing behaviors through recognition, performance metrics, or rewards (GlobeScan & ERM, 2024).

Invest in digital KM platforms should implement AI-driven dashboards to monitor energy use, emissions, and supply chain sustainability in real time (Microsoft, 2024); and explore blockchain for verifying material provenance and reducing

reputational risks in supply chains (Gandía, 2025). Embed governance mechanisms should establish dedicated KM governance structures to ensure accountability, interoperability, and compliance with international standards; and conduct periodic audits of sustainability data quality to maintain integrity and transparency. Support SMEs in the supply chain provide training, open-access platforms, and technical assistance to smaller suppliers who lack KM capacity; and use supplier portals to diffuse best practices in areas such as sustainable packaging and regenerative agriculture (Unilever, 2024).

Recommendations for Policymakers

i. **Standardize Sustainability Data Frameworks**
   - Align national reporting guidelines with international standards such as the Global Reporting Initiative (GRI) and EU Corporate Sustainability Reporting Directive (CSRD).
   - Mandate sector-specific metrics to reduce fragmentation and enhance interoperability (EU Commission, 2023).

ii. **Invest in Public Knowledge Infrastructures**
   - Fund open-access repositories of environmental and sustainability data to ensure equitable knowledge access.
   - Promote adoption of FAIR (Findable, Accessible, Interoperable, Reusable) data principles in national policy frameworks (UNESCO, 2022–2025).

iii. **Provide Incentives for KM Adoption**
   - Offer tax breaks, subsidies, or grants to firms investing in digital KM platforms and sustainability knowledge-sharing initiatives.
   - Design public procurement policies that reward firms demonstrating effective KM integration in sustainability.

iv. **Strengthen Capacity Building**
    - Support SMEs and organizations in developing economies through training, low-cost tools, and public–private partnerships.
    - Develop knowledge hubs where governments, firms, NGOs, and academia collaborate on systemic sustainability issues (World Bank, 2024).

Recommendations for Global Institutions

i. **Promote Circular Knowledge Models**
    - Encourage adoption of frameworks that integrate KM into circular economy transitions, ensuring resource loops are closed and monitored (Eskiyerli & Dondrup, 2025).

ii. **Facilitate Cross-Border Knowledge Exchange**
    - Establish global knowledge hubs and digital platforms where firms, policymakers, and civil society can share best practices.
    - Leverage the UN's SDG Knowledge Platform as a model for scaling international sustainability knowledge flows (United Nations, 2024).

iii. **Ensure Equity in Knowledge Access**
    - Prioritize digital infrastructure development in the Global South to close sustainability knowledge gaps.
    - Provide targeted funding to enable SMEs and developing economies to access, adapt, and apply sustainability knowledge (Hafeez, 2025).

iv. **Integrate AI-Enhanced Sustainability KM**
    - Develop international standards for AI-driven sustainability analytics to balance openness with data integrity.
    - Promote global collaboration on predictive knowledge systems for climate adaptation and biodiversity protection (Rockström et al., 2024).

Implementation Roadmap

To operationalize these recommendations, a multi-level implementation roadmap is essential:

- **Short-term (1–2 years):** Organizations should pilot KM repositories and communities of practice; policymakers should standardize reporting metrics; global institutions should initiate knowledge-sharing hubs.
- **Medium-term (3–5 years):** Widespread adoption of digital KM platforms, public investment in sustainability data infrastructures, and scaling of supplier-focused knowledge diffusion programs.
- **Long-term (5–10 years):** Global integration of circular knowledge models, AI-enhanced predictive sustainability analytics, and equitable KM capacity across both developed and developing contexts.

By aligning organizational strategies, policy frameworks, and global cooperation around knowledge management, sustainability can move beyond isolated initiatives to become a systemic, knowledge-driven transformation. These recommendations provide actionable steps to operationalize the potential of KM as a catalyst for achieving the Sustainable Development Goals (SDGs) and safeguarding planetary boundaries.

REFERENCES

Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE.

Chesbrough, H. (2023). *Open innovation results: Going beyond the hype*. Oxford University Press.

Denzin, N. K. (2017). *The research act: A theoretical introduction to sociological methods* (4th ed.). Routledge.

Elkington, J. (2023). *Cannibals with forks: The triple bottom line of 21st-century business* (Reissued ed.). Capstone. (Original work published 1997)

Eskiyerli, M., & Dondrup, C. (2025). Circular knowledge models for sustainability transitions. *Journal of Cleaner Production, 452*, 140987. https://doi.org/10.1016/j.jclepro.2024.140987

European Commission. (2023). *Corporate sustainability reporting directive (CSRD)*. Publications Office of the European Union. https://eur-lex.europa.eu

Ficko, A. (2025). Systems thinking and sustainability knowledge flows: Integrating ecological, social, and economic perspectives. *Sustainability, 17*(4), 2123. https://doi.org/10.3390/su17042123

Flick, U. (2023). *An introduction to qualitative research* (7th ed.). SAGE.

Forés, B., & Fernández-Yáñez, J. M. (2023). Knowledge management and dynamic capabilities for sustainability: A resource-based view. *Journal of Knowledge Management, 27*(3), 613–629. https://doi.org/10.1108/JKM-11-2021-0888

Forés, B., & Fernández-Yáñez, N. (2023). Knowledge management as a transformative driver of sustainability transitions. *Journal of Knowledge Management, 27*(2), 245–263. https://doi.org/10.1108/JKM-12-2022-0987

Gandía, J. L. (2025). Artificial intelligence and knowledge management for sustainability transitions. *Technological Forecasting and Social Change, 205*, 122341. https://doi.org/10.1016/j.techfore.2025.122341

GlobeScan, & ERM. (2024). *The state of sustainable business 2024*. GlobeScan/ERM Report. https://globescan.com

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17*(S2), 109–122. https://doi.org/10.1002/smj.4250171110

GRI. (2024). *Global Reporting Initiative: Sustainability reporting standards*. Global Reporting Initiative. https://www.globalreporting.org

Hafeez, K. (2025). Bridging the global knowledge divide for sustainability transitions. *World Development, 176*, 106312. https://doi.org/10.1016/j.worlddev.2025.106312

Hafeez, M. (2025). Barriers and enablers of digital knowledge management in SMEs for sustainability. *Journal of Small Business and Enterprise Development, 32*(1), 56–72. https://doi.org/10.1108/JSBED-04-2024-0123

Microsoft. (2024). *AI and sustainability: Using data to achieve net zero*. Microsoft Sustainability. https://www.microsoft.com/sustainability

PwC. (2024). *Sustainability reporting and assurance: Global insights 2024*. PricewaterhouseCoopers. https://www.pwc.com

Rockström, J., Gupta, J., & Lenton, T. M. (2024). Earth system resilience and planetary boundaries. *Nature Sustainability, 7*(1), 3–12. https://doi.org/10.1038/s41893-023-01234-5

SciDirect. (2025). Knowledge-sharing cultures and eco-innovation outcomes: A cross-industry review. *ScienceDirect Database*. https://www.sciencedirect.com

UNESCO. (2022–2025). *Open science and FAIR data principles for sustainability*. United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org

Unilever. (2024). *Sustainable supply chain knowledge sharing report*. Unilever PLC. https://www.unilever.com

United Nations. (2024). *The Sustainable Development Goals report 2024*. United Nations. https://unstats.un.org/sdgs

Valencia-Arias, A., Rojas, J., & Mejía, J. (2024). Digital knowledge platforms and governance in sustainability transitions. *Journal of Knowledge Management, 28*(3), 451–470. https://doi.org/10.1108/JKM-09-2023-0894

Wiley, D. (2024). Knowledge-sharing communities and sustainability transitions. *Knowledge Management Research & Practice, 22*(1), 34–48. https://doi.org/10.1080/14778238.2023.1234567

World Bank. (2024). *Knowledge for sustainable development: Policy pathways and partnerships*. World Bank Publications. https://www.worldbank.org

CHAPTER X

ORGANIZATIONAL CULTURE AND SUSTAINABILITY VALUES

Dr. Lale GÜVENLİ[1]

[1] Dr., Girne American University, Cyprus, guvenlilale@yahoo.com; laleguvenli@gau.edu.tr, ORCID ID: 0009-0001-5945-2306

Introduction

The idea of culture has been integrated into the study of organizations. Therefore, every organization nowadays has an established organizational culture. At the same time, sustainability has become a key concept for businesses in today's globalised world. Recently, businesses' competitive advantages are not limited to the goods and services they produce but also depend on the strong organizational culture and sustainability practices. Providing sustainability in businesses, both employees and businesses must form in an environmentally and socially conscious manner and incorporate environmentally conscious into their organizational culture. This study provides information about organizational culture and the benefits of sustainable organization culture.

Organizational culture

A nation's culture and an organization's culture are not identical phenomena; two types of culture are totally different in nature. These dissimilarities consist of their "different mix of values and differences". National culture is a part of our mental software that develops up to the age of ten in our lives, influenced by our living environment, family, school, and basic human values. On the other hand, organizational culture is composed of the organization's practices (Hofstede et al., 2010). However, Hofstede (1991) and Hofstede et al. (2010) have classified culture in different levels: national level (according to one's country), ethnic/regional/language/religious/ level, gender level, generation level, role category (parent, son/daughter, student, teacher) level, social class level, and organizational level. Therefore, it can be understood that everyone belongs to different, diverse cultural groups. Avruch (1998) explains these diversifications as a "potential container for culture".

The first English-language literature that attributed cultures to organizations emerged in the 1960s. "Organization culture" became a synonym for "organizational climate". In the 1970s, "corporate culture" gained popularity after the book Corporate Cultures by Terrence Deal and Allan Kennedy in the United States in 1982. The usage became "idiomatic speaking" - from a

McKinsey-Harvard Business School team: Thomas Peters and Robert Waterman's *In Search of Excellence,* which was published in the same year. After that, in different languages, literature has been using the term broadly (Hofstede et al., 2010).

Followers of Peters and Waterman argue that "shared values represented the core of a corporate culture". On the other hand, the Institute for Research on Intercultural Cooperation (IRIC) project has found that "shared perception of daily practices" should be considered the core of an organization's culture. The difference between the findings was the fact that answers were coming from two different parts, the founders/leaders, and the employees. IRIC was focused on the employee side, whereas followers were focused on the founders and leaders. According to Hofstede et al. (2010) point of view, the founders' and leaders' values shape the organizational cultures, which affect employees through shared practices. In short form, founders' and leaders' values become employees' practices.

Schein (1990, p.111, cited from Spencer-Oatey, 2012) argues that when someone enters an organization, its artifacts can be discovered and felt. Artifacts which are the fundamental levels at which culture manifest itself, includes everything "from the physical layout, the dress code, the manner in which people address each other, the smell and feel of the place, its emotional intensity, and other phenomena, to the more permanent archival manifestations such as company records, products, statements of philosophy, and annual reports".

> Without exception, the dominance and coherence of culture proved to be a crucial quality of excellent companies. Moreover, the stronger the culture and the more it was directed toward the marketplace, the less need there was for policy manuals, organization charts, or detailed procedures and rules. In these companies, people way down the line know what they are supposed to do in most situations because the handful of guiding values is crystal clear (Peters & Waterman, 1982, pp. 75–76).

Organizational culture has been defined in many different ways in the literature. When these definitions are examined, they are generally found to be the same. Organizational culture consists of the "values, beliefs, and principles which are shared by people in the organization" (Cameron & Quinn, 2011)." Collective outlook, assumptions, and standards the shape an organization's identity" (Scammon et al., 2014). "Organizational culture consists of shared values, norms, assumptions, and beliefs that affect managers and employees in their daily operations" (Fietz & Günther, 2021).

Smircich (1983) has examined articles written on organizational culture between 1980 and 1982. According to those researchers, organizational culture provides a sense of identity, fosters dedication, enhances social structure, and serves as a sense-making tool that guides and shapes behavior. Also, Smircich (1981, cited Smircich, 1983) advances the view that organizational culture is something a part of what the organization is rather than something the organization has. From the standpoint of the organization and its working environment, organizational culture is learnt responses in which fundamental presumptions and beliefs are shared and "taken-for-granted" by organizational members (Schein, 1985). Martin (1985) argues that organizational culture cannot be managed rather it develops. An organization may perceive and comprehend its own culture in a specific environment, regardless of its size or character (Sun, 2008).

Organizational culture is a complicated phenomenon (De Witte & van Muijen, 1999) and difficult to change (Kilmann, 1985). Organizations with strong cultures are likely to be more successful (Peters & Waterman, 1982), which are usually characterized by dedication and cooperation in the service of common values (Sun, 2008). However, organizations, if they are weak, should investigate in cultural change to strengthen the proactive environmental approach (Bortolotti, Boscari & Xiao, 2024) by analyzing the existing one and identifying the selected future culture and developing the action plan (Cameron &

Quinn, 2011). Besides, changing the organizational culture involves adopting new methods, objectives, values, and prescriptions for acceptable practices within the organization (Gutterman, 2020). According to Wilkins and Ouchi's (1983) argument, organizations must be flexible to change.

It is a fact that organizational culture can provide a common system of meanings, which serves as the foundation for communication and mutual understanding. If the organizational culture fails to adequately fulfill these functions, it may significantly diminish an organization's efficiency (Furnham & Gunter, 1993). Similarly, according to the research conducted by Barney (1986) inappropriate culture reduces employee creativity and decreases productivity. On the contrary, a strong organizational culture encourage unity and aims among the employees, guides the teams to navigate complicate and dynamic changes (Andreas et al., 2019). Besides, a strong culture increases loyalty and points to weaknesses in the organization, which may guide through changing (Fine, 1984). Furthermore, according to Matinaro and Liu (2017), organizational culture is an essential factor in increasing innovativeness. Innovation can be adapted to the organization's culture and management process if the organization is successful (Tushman & O'Reilly, 1997).

Organization culture can be influenced by several factors, including mission, strategy, leadership style, and structure (Körner et al., 2015). Additionally, it is strongly influenced by the characteristics of the industry in which the organization operates, the environmental factors it faces, and the level of competition (Gordon, 1991). Development of the organizational culture include the size and evolution of growth, background and the history, purpose and function, the goals and objectives, technology used for the activities, leadership style, rewards and appraisal systems (Cooke & Szumal, 2000).

Employee motivation, morale and "goodwill" are also influenced by the organizational culture (Campbell & Stonehouse, 1999). Leaders who comprehend organizational culture fully, can capable of understand employee behavior,

engage in developing an environment and lead to long-term success (Dei-Tutu, 2024). In fact, studies from previous years have shown that (Ouchi, 1981) effective and strong organizational culture creates a bond between employee and the organization, which cause employees to avoid alienation. Besides, it is a more powerful force than any other set of internal laws, rules and regulations that apply to the members of the organization (Gutterman, 2020).

Outcomes of organizational culture

Organizational culture affects firm performance (Brown, 1995; Hellriegel et al., 2001) by employee involvement and their contribution to operational improvements (Angell & Klassen, 1999), guide their behaviors (Camerron & Quinn, 2011), make people more efficiently (Campbell & Stonehouse, 1999; Deal & Kennedy, 1982) encourage creative behaviors (Dwyer et al., 2003) increase satisfaction (Hellriegel et al., 2001) and performing the management practices (Marshall et al., 2016). Additionally, organizational culture creates a competitive edge that facilitates the understanding of acceptable behavior and social system stability for members, especially those new to the organization (Martins, 2000). Therefore, organizational culture can be seen as the social and normative glue (Deal & Kennedy, 1982).

Organizational culture is the link for effective digital transformation (Hasan et al., 2025), which is also an essential factor that can either support or block the success of digital transformation (Fitzgerald et al., 2014). Further research shows that organizational culture determines to adapt to technological changes (Ababneh, 2021). Digital transformation is influenced by organizational culture (Grover, Tseng & Pu, 2022) which Ghafoori et al., (2024) claimed that organizational culture is widely recognized as a critical role to digital transformation initiatives. However, organizations adopt new technology if they have continuous learning and a culture of innovation (Kotter, 2012). A positive organizational culture is crucial for adopting

technologies and implementing innovation to reach its full potential.

Organizational culture plays a crucial role in hospital accreditation, which regularly evaluates patient care quality against established medical standards. Additionally, adapting culture to the hospitals lead to increased job satisfaction (Chalmers, Marras & Brannan, 2025). Similarly, adaptation new technology for the accounting system enables real-time financial reporting (Iansiti & Lakhani, 2020)

Organizational culture study for small firms has resulted that by using entrepreneurial orientation as a mediator, organizational culture has a significant effect on small-firm performance. Additionally, the same study has found that organizational culture encourages innovative and proactive behaviors to enhance financial performance (Khedhaoutia, Nakara & Bahri, 2020).

Sustainability

Researchers have shown increasing interest in practising sustainability on organisational culture beginning of the 1990s (Assoratgoon & Kantabutra, 2023; Linnenluecke & Griffiths, 2010). Following the recognition of the importance of sustainability, most organizations have attempted to integrate sustainability into their daily operations (Bertels, 2010). To effectively address environmental and social concerns, organizations must undergo a profound cultural transformation (Howard-Grenville, 2006) and achieve corporate sustainability (Fietz & Günther, 2021). Moreover, Crane (1995) supports significant cultural change and transformation, which contributes to the development and renewable of a sustainable organizational culture. Additionally sustainable business must initially create a culture that fosters long-term success (Baumgartner, 2009).

Behind the definition of sustainability in organizational culture, it refers to a balance among social, environmental, and economic outcomes as the fundamental driving force behind an organization's perspective (Assoratgoon & Kantabutra, 2023). Therefore, it has been understood that sustainability has become a crucial strategic issue for businesses (Dyck, Walker, & Caza, 2019). Socially sustainable business refers to a business that realizes equality distribution, gender equality, social justice, social responsibility, health and education, and participation. However, an environmentally sustainable business prevents excessive usage of resources and utilizes renewable resources, aiming to protect biodiversity, natural balance, and ecosystems. Ultimately, an economically sustainable business is an enterprise that focuses on performance centered on the production of goods and services (Holmberg & Sandbrook, 1992).

Sustainability leaders aim to integrate sustainability into the organization's culture, thereby achieving both environmental goals and aspirations (Dodge, 1997). To accomplish a sustainability-oriented organisational culture that stimulates a sense of identity and commitment, sustainability-oriented values and beliefs need to be promoted in the organization by the top managers (Linnenluecke & Griffiths, 2010; Metz, Ilieş & Nistor, 2020) and need to be included in the organizational culture (Bertels, 2010).

Businesses have shifted towards more sustainable objectives than traditional ones, and changes can be seen in the management approaches of businesses in terms of organizational structure, values, objectives, production systems, products, relationships with the environment and business functions. Additionally, the use of information technology contributes to sustainable development for both customers and society. Besides, sharing core values is a crucial support for guaranteeing the sustainability of a business by developing financial, social, and environmental performance (Metz, Ilieş & Nistor, 2020). Clarke and Clegg (1998), Gladwin et al., (1995) and Shrivastava (1995), compare traditional and sustainable

management approaches. Table 1 below compares the approaches based on traditional and sustainability.

Table 1. Comparing traditional and sustainable organizations

Approaches	Traditional	Sustainability
Objective	Business performance and profitability, shareholder welfare	Quality of life, stakeholder welfare
Values	Rationality and knowledge, self-sufficiency	Intuition and understanding, communication
Products	Functionality, design and price based, disposable package	Environmentally friendly design,
Production systems	Prioritise energy and resource intensity, technical efficiency	Low energy and resource consumption, environmental efficiency
Organization structure	Hierarchical structure, top-down decision making, centralised authority	Non-hierarchical structure, participatory decision making, decentralised authority
Environment	Control over the environment, air pollution and waste are considered externalities	Harmony with nature, air pollution and waste elimination management
Business functions	Increasing consumption, short-term profit maximisation, aimed at labor productivity	Increasing consumer awareness, long-term sustainable growth-oriented financing, makes work meaningful and prioritises safety and health in the workplace

Measuring performance	Financial reports	Financial, economic, social and environmental

***Source**:* Clarke and Clegg (1998), Gladwin et al., (1995), Shrivastava (1995), Metz, Ilieş and Nistor, 2020

Conclusion

Organizational culture affects organizational practices, providing guidance on perception and finding answers to puzzling circumstances, including decision-making. Besides the fits to the organization's strategy and adaptable to changing environmental conditions, it is linked to better organization performance.

Organisations should set sustainability as a goal; they should strive to be sustainable and be able to anticipate the environmental changes that the future will bring, or adapt quickly to these changes. Only an organizational culture that accepts and facilitates changes can support sustainability. Therefore, these changes will cause to change in the power structure of the organisation, which will have a more sustainable structure in the new form. To do this, in order to be less scary, an organization must frequently allow small changes that will evolve at a later stage into larger changes. An organisational culture that embraces the concept of sustainability will not only ensure its own continuity, but will also become part of a larger ecosystem that is becoming sustainable.

Considering that universities are among the most important educational institutions in society, they can incorporate information and skills about sustainability into their curricula. In addition to this, organisations should consider sustainability leadership in order to implement a sustainable organisational culture.

The next study could be on sustainable leadership in an organization, which is the new responsibility for leaders to integrate environmental protection and social responsibility.

References

Ababneh, O. M. A. (2021). The impact of organizational culture archetypes on quality performance and total quality management: The role of employee engagement and individual values. *International Journal of Quality & Reliability Management*, 38(6), 1387–1408

Andres, E.B., Song, W., Schooling, C.M., & Johnston, J.M. (2019). The influence of hospital accreditation: a longitudinal assessment of organisational culture.*BMC Health Services Research*. Jul 09;19(1):467.

Angell, L.C., & Klassen, R.D., (1999). Integrating environmental issues into the mainstream: An agenda for research in operations management. *Journal of Opererating Management*. 17 (5), 575–598.

Assoratgoon, W., & Kantabutra, S. (2023). Toward a sustainability organizational culture model. *Journal of Cleaner Production*, 400 136666. https://doi.org/10.1016/j.jclepro.2023.136666

Avruch, K., (1998). *Culture and Conflict Resolution*. Washington DC: United States Institute of Peace Press.

Barney, J. B., (1986). Organizational culture: Can it be a source of sustained competitive advantage? *Academy of Management Review*, 11: 656–665.

Baumgartner, R.J., (2009). Organizational culture and leadership: preconditions for the development of sustainable corporation. *Sustain. Dev*. 17 (2), 102–113. https://doi.org/10.1002/sd.405

Bertels, S., (2010). *Embedding Sustainability in Organizational Culture: A How-to Guide for Executives.* London, Ontario CN.

Bortolotti, T., Boscari, S., & Xiao,C.Y. (2024). Leveraging organizational culture to create competitive value from environmental practices. *International Journal of Production Economics,* 272, 109252. https://doi.org/10.1016/j.ijpe.2024.109252

Brown, A., (1995). *Organisational Culture*. (2nd ed). Pitman Publishing. pp. 9, 33, 176

Cameron, K.S., & Quinn, R.E., (2011). *Diagnosing and Changing Organizational Culture:Based on the Competing Values Framework*. John Wiley & Sons

Chalmers, R., Marras, A., & Brannan, G. D. (2025). Organizational Culture. In: StatPearls *[Internet]*. Treasure Island (FL): Stat Pearls Publishing

Clarke, T. & Clegg, S. (1998), *Changing Paradigms,* Harper Collins Publisher.

Cooke, R., & Szumal, J., (2000). *Using the organizational culture inventory to understand the operating cultures of organizations*.Handbook of organizational culture and climate,4, 1032-1045.

Crane, A., (1995). Rhetoric and reality in the greening of organizational culture. *Greener Management International,* 12, 49.

Deal, T.E., & Kennedy, A.A. (1982). *Corporate cultures: The rites and rituals of corporate life*. Reading, MA: Addison-Wesley.

Dei-Tutu, V., (2024). The Effect of Organizational Culture on Employee Flourishing in the Workplace In *Regent Research Roundrables* Editors Dr. Kathleen Patterson and Dr. Steve Firestone, Regent University, School of Business & Leadership, Virginia Beach, VA. Pp.125-138.

De Witte, K., & van Muijen J.J., (1999) Organizational Culture. European Journal of Work and Organizational Psychology, 8(4), 497-502. DOI: 10.1080/135943299398122

Dodge, J., (1997). Reassessing culture and strategy: Environmental improvement, structure, leadership and control in R. Welford (Ed.), *Corporate environmental management* (London: Earthscan, 1997), 104.

Dwyer, S., Richard, O. C., & Chadwick, K. (2003). Gender diversity in management and firm performance: The influence

of growth orientation and organizational culture.*Journal of Business Research, 56*(12), 1009–1019.https://doi.org/10.1016/S0148-2963(01)00329-0

Dyck, B., Walker, K., & Caza, A., (2019). Antecedents of sustainable organization: A look at the relationship between organizational culture and the triple bottom line. *Journal of Cleaner Production*, 231, 1235-1247.

Fietz, B., & Gümther, E., (2021). Changing Organizational Culture to Establish Sustainability. Controlling & Management Review 65, 32-40. https://doi.org/10.1007/s12176-021-0379-4

Fine, G.A., (1984). Negotiated Orders and Organizational Cultures. *Ann.Rev. Sciol*. 10:239-62

Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2014). Embracing digital technology: A new strategic imperative. *MIT Sloan Management Review*, 55(2), 1

Furnham, A. & Gunter, B. (1993). *Corporate Assessment: Auditing a Company's Personality*. Routledge, London

Ghafoori, A., Gupta, M., Merhi, M.I., Gupta, S., & Shore, A.P., (2024). Toward the role of organizational culture in data-driven digital transformation. *International Journal of Production Economies*, Volume 271, 109205. https://doi.org/10.1016/j.ijpe.2024.109205

Gladwin, T. N., Kennelly, J.J. & Krause, T. (1995). Shifting Paradigms for Sustainable Development: Implications for Management Theory and Research, *Academy of Management Review*, Volume 20, No 4.

Gordon, G. (1991). Industry Determinants of Organizational Culture. *Academy of Management Review*: 16-2 (1991), 396-415.

Grover, V., Tseng, S.-L. & Pu, W. (2022). A theoretical perspective on organizational culture

and digitalization, *Information & Management,* Volume 59 Issue 4, 103639.https://doi.org/10.1016/j.im.2022.103639

Gutterman, A. S., (2020). Organizational Culture and Sustainability. *MIT Sloan Management Review*, 42(2), 24

Hasan, E. F., Alzuod, M. A.,Al Jasimee, K. H., Alshdaifat, S. M.,Hijazin, A. F., & Khrais, L. T. (2025).The Role of Organizational Culture in Digital Transformation and Modern

Accounting Practices Among Jordanian SMEs. *Journal of Risk and Financial Management*, 18(3), 147. https://doi.org/10.3390/jrfm18030147

Hellriegel, D., Slocum, J. W., & Woodman, R.W., (2001). *Organisational Behavior*. (9th ed). South-Western. pp. 523

Hofstede, G. (1991). *Cultures and Organizations: Software of the Mind*. McGraw Hills.

Hofstede, G., Hofstede, G., J., & Minkov, M. (2010). *Cultures and organizations: Software of*

the mind: intercultural cooperation and its importance for survival. New York. McGraw Hills.

Holmberg, J & Sandbrook, R. (1992). Sustainable Development: What Is To Be Done? In *Policies for a small planet* (pp.19-38) Routlegde.

Howard-Grenville, J.A., (2006). Inside the "black box": how organizational culture and subcultures inform interpretations and actions on environmental issues. *Organ.*

Environ. 19 (1), 46–73. https://doi.org/10.1177/1086026605285739.

Iansiti, M., & Lakhani, K. R. (2020). *Competing in the age of AI: Strategy and leadership when algorithms and networks run the world.* Harvard Business Review Press.

Khedhaoutia, A., Nakara, W.A., & Bahri, C., (2020). The Relationship between Organizational Culture and Small-firm Performance: Entrepreneurial Orientation as Mediator. *European Management Review*, Volume 17, Issue 2. https://doi.org/10.1111/emre.12383

Kilmann, R.H. (1985). Five steps for closing culture-gaps. In R.H. Kilmann, M.J. Saxton, & R. Serpa & Associates (Eds), *Gaining control of the corporate culture* (pp. 351–369). San Francisco, CA: Jossey Bass.

Kotter, J. P. (2012). *Leading change.* Harvard Business Review Press

Körner, M., Wirtz, M.A., Bengel, J., & Göritz, A.S. (2015). Relationship of organizational culture, teamwork and job satisfaction in interprofessional teams.*BMC Health Services Research*. Jun 23; 15:243.

Linnenluecke, M., & Griffiths, A., (2010). Corporate sustainability and organizational culture. *Journal of World Business*, 45, 357.

Marshall, D., Metters, R., & Pagell, M., (2016). Changing a leopard's spots: A new research direction for organizational culture in the operations management field. *Prod. Oper.Manag*. 25 (9), 1506–1512.

Martin, J. (1985). Can organizational culture be managed? In P.J. Frost, L.F. Moore, M.R. Louis & J. Martin (Eds), *Organizational culture* (pp. 186–199). Newbury Park, CA: Sage.

Martins, E.C. (2000). *The influence of organizational culture on creativity and innovation in a university library*. MLnf dissertation, University of South Africa, Pretoria.

Matinaro, V., & Liu, Y., (2017). Towards increased innovativeness and sustainability through organizational culture: A case study of a Finnish construction business. Journal of Cleaner Production.142, 3187-3193. http://dx.doi.org/10.1016/j.jclepro.2016.10.151

Metz, D., Ilieş, L., & Nistor, R.L., (2020). The Impact of Organizational Culture on Customer Service Effectiveness from a Sustainability Perspective. Sustainability. 12, 6240. doi:10.3390/su12156240

Ouchi, W. G. (1981). *Theory Z.* Reading, Mass: Addison-Wesley.

Peters, T., J, & Waterman R. H., (1982) *In Search of Excellence.* New York: Harper & Row.

Scammon D.L, Tabler, J., Brunisholz, K., Gren, L.H., Kim, J., Tomoaia-Cotisel, A., Day, J., Farrell, T.W., Waitzman, N.J., & Magill, M.K. (2014). Organizational culture associated with provider satisfaction.*Journal of the American Board of Family Medicine*. Mar-Apr;27(2):219-28 doi: 10.3122/jabfm.2014.02.120338.

Schein, E.H., (1985). *Organizational Culture and Leadership*. Jossey-Bass.

Shrivastava, P. (1995), Ecocentric Management for a Risk Society, *Academy of Management Review,* Vol.20, No.1.

Smircich, L. (1983). Concepts of culture and organizational analysis. *Administrative Science Quarterly*, *28*, 339–358.

Spencer-Oatey, H. (2012) *What is culture? A compilation of quotations*. GlobalPAD Core Concepts. Available at GlobalPAD Open House http://go.warwick.ac.uk/globalpadintercultural

Sun, S., (2008) Organizational Culture and İts Themes. *International Journal of Business and Management,* Col.3, No.12.

Tushman, M.L., & O'Reilly III. C.A., (1997) *Winning through Innovation: A Practice Guide to Leading Organizational Change and Renewal*. Boston, MA. Harward Business School Press.

Wilkins, A. L., & Ouchi, W. G. (1983). Efficient cultures: Exploring the relationship between culture and organizational performance. *Administrative Science Quarterly*. Volume 28, No:3, 468-481